

Digitized by the Internet Archive
in 2010 with funding from
NCSU Libraries

<http://www.archive.org/details/markhamsfarewelt00mark>

N/191

Wing 1054
Krebs Harbor

Markham's Farewel to
HUSBANDRY:

O R,
The Enriching of all sorts of Barren and
Sterile Grounds in our Nation, to be as
Fruitful in all manner of Grain, Pulse, and
Grass, as the best Grounds whatsoever.

Together with the Annoyances and Preservation of all
Grain and Seed, from one year to many years.

As also a Husbandly computation of Men and Cattels
daily Labours, their Expences, Charges, and utmost profits.

Now newly the Tenth time revis'd, corrected and amen-
ded, together with many new Additions, and cheap Experiments.

For the bettering of Arable Pasture, and
Woody Grounds: Of making good all Grounds
again, spoiled with over-flowing of Salt water by
Sea breaches; as also the enriching of the Hop-
Garden. And many other things never
published before.

By *G. Markham.*

L O N D O N,

Printed for *George Sawbridge*, at the Sign of the Bible
on *Ludgate-Hill*, 1676.



TO the RIGHT WORSHIPFUL
AND

His most Worthy FRIEND,
BONHAM NORTON, Esq;

Worthy Sir,

Knowledge, which is the divine
mother of certain Goodness, ne-
ver came unwelcome to a know-
ing Judgment; no more, I hope,
shall this my labour to your worthy Self, since
doubtless you shall find in it many things
necessary, and nothing which hath not in it
some particular touch of profit: It is a work
your former encouragements to my other la-
bours did create in me, and the wants you
worthily found, I hope shall bring you sup-
plies

plies both wholesome and becomming. The experience, I assure your goodness, was the expence of a bitter and tedious Winter ; but the contentment (in gaining my wish) made it more pleasant then all the three other Seasons. What ever it be, it comes to you full of love, full of service. And since I know Virtue measureth all things by its own goodness ; it is enough to me, that I know you are that Virtue. In you is power to judge, in you is Authority to exercise Mercy ; let them both flye from your goodness with that mildness, that in them my hopes may be crowned , and my self rest ever at your service.

GERVASE MARKHAM.

The Preface to the Reader.

Shewing the use, profit, and truth of the Work.

THe use and application of this *Work*, (gentle Reader) is to reduce the *Hard, Barren, and Sterile Grounds*, such as were never fruitfull, or such as have been fruitfull, and are made barren by ill Husbandry, to be generally as fruitfull as any ground whatsoever; from whence shall ensue these general profits.

First, Plenty of Corn and Pulse; because all grounds being made able and apt for Tillage, the Kingdome may afford to sowe for one bushell that is now, hereafter five hundred, so mighty great are the unfruitfull wastes of Heaths, Downes, Mores, and such like; which at this day lye unprofitable; and to this abundance of Corn will arise an equall abundance of Grass and Pasture: for as the best ground of the worst is to be converted to Pasture, and the worst to Tillage; so that worst being tilled and drest, when it hath done bearing of Corn, (which will be in six or seven years) shall for as many years more bear as good Pasture either for breeding or feeding as can be required, and then being newly drest again, shall newly flourish in its first profit.

Secondly, whereas in fruitfull places, the third or fourth part of all arable ground is lost in the fallow or tith ground, now in these barren grounds, you shall keep no fallow field at all, but all shall bear either Corn or Grass; that fallow part serving to pay for the charge bestowed on it, and the rest.

Lastly, whereas in fertile grounds you cannot have either *Wheat, Barley, or Rye*, under two, three, four, five, and
six.

six severall plowings, as fallowing in January and February, Stirring in April and May, Soiling in July and August, Winter-ridging in October and November, and Sowing, with other Ardors; now in these hard grounds restored, you shall not plow above twice at the most, to the saving of the Husbandmans pains, his Cattels travell, and a larger limitation of time for other necessary businesses.

For the truth of the Work, he that will ride into the barren parts of Devonshire or Cornwall, into the Mountainous parts of Wales, into the hard parts of Middlesex, or Darbyshire, or into the cold parts of Northumberland, Cumberland, Westmerland, Lancashire, or Cheshire; shall find, where industry is used, a full satisfaction for all that is here written.

Farewell.

Tbine, G. M.



MARKHAM

HIS Farewel to Husbandry.

CHAP. I.

*The Nature of Grounds in general ; But particularly of the
barren and steril earth.*

TO come to the full effect of my purpose, without any preambulation, or satisfaction to the curious, (for to the honestly vertuous are all mine endeavours directed) you shall understand that it is meet, that every Husbandman be skilful in the true knowledge of the nature of grounds ; as, which is fruitful, which not : of which in my first Books I have written sufficiently ; nor do I in this Book intend to write any tittle that is in them contained ; for as I love not *Tautology*, so I deadly hate to wrong my friend.

Grounds, then, as I have formerly written in my first books, being simple or compounded ; as simple Clays, Sands, or Gravels together, may be all good, and all fit to bring forth increase ; or all evil and barren, and unfit for profit : for every Earth, whether it be simple or compound, whether of it self or of double mixture, doth participate wholly with the Climate wherein it lyeth ; and as that is more hot, or more cold, more moist or more dry ; so is the earth ever more or less fruitful. Yet for the better understanding of the plain:

Cour--

Country-man, you shall know that both the fruitful and unfruitful Grounds have their several faces and characters, whereby they be as well known, as by the clime or situation of the continent; for that ground, which, though it bear not any extraordinary abundance of grass, yet will load it self with strong and lusty weeds, as Hemlocks, Docks, Mallows, Nettles, Kettle-lock, and such like, is undoubtedly a most rich and fruitful ground for any grain whatsoever. And also, that ground which beareth Reeds, Rushes, Clover, Daisie, and such like, is ever fruitful in Grass and Herbage, so that small cost, and less labour in such grounds, will ever make good the profit of the Husbandman: But with these rich grounds, at this time I have nothing to do.

To come down then to the barren and unwholesome Grounds, you shall understand that they are to be known three several wayes: first, by the Clime and Continent wherein they lye; next, by their constitution and condition; and lastly, by outward faces and characters. By the Clime and Continent, as when the ground lyes far remote from the Sun, or when it lyes mountainous and high, stony and rocky, or so neer unto the Skirts and borders of the Sea, that the continual Fogs, Storms, Mists, and ill Vapours arising from thence do poyson and starve the earth: all which are most apparent signs of barrenness. By the Constitution and Condition, as when the ground is either too extreemly cold and moist, or else too violently hot and dry; either of which produceth much hardness to bring forth, and sheweth the earth, so lying to be good for little or no profit. By the outward faces and Characters, as when you see (instead of Grass, which would be green, flowry, and thick growing) a pale thin mossie substance cover the earth, as most commonly is upon all high Plains, Heaths, Downs, and such like; or when you see the ground covered with Heath, Ling, Broom, Braken, Gorse, or such like, they be most apparent signs of infinite great barrenness, as may be seen in many Moors, Forrests, and other wild and woody places. And of these unfertile places, you shall understand, that it is the clay ground, which for the most part brings forth the Moss, the Broom, the Gorse, and such like; the sand, which bringeth forth Brakes, Ling, Heath, and

and the mixt earth, which utters Whinnes, bryars, and a world of such like unnatural and bastardy issues.

Thus having a true knowledge of the Nature and Condition of your ground, you shall then proceed to the ordering, earing, and dressing of the same, whereby it may not only be purged and cleansed from those faults which hindred the increase thereof, but also so much bettered and refined, that the best ground may not boast of more ample increase, nor your more fruitfull placed Neighbours exceed you in any thing, more then in a little ease.

CHAP. I I.

Of the Ordering, Tilling, and Dressing of all sorts of plain barren Clayes, whether they be simple or compound.

THOU whom it hath pleased God to place upon a barren and hard soil, whose bread must evermore be ground with sweat and labour, that maist nobly and victoriously boast the conquest of the earth, having conquered Nature by altering Nature, and yet made nature better than shee was before : thou I say that taketh this honest delight in goodness, hearken unto these following Precepts.

As soon as thou halt well pondered and considered the nature of thy ground, & dost find that it is altogether barren & unfruitful, the clyme and condition not suffering it to bring forth any thing of worth or profit, and that thou hast well weighed what manner of earth it is, as that namely, it is either a simple Clay, or a Clay so mixt with othet earths, that yet notwithstanding the Clay is still most predominant; thou shalt then select or chuse out of this earth so much as to thy self shall seem convenient, it being answerable to the strength of thy Team, and the ability of thy purse and labour to compass; and this earth so chosen out, thou shalt about the beginning of May, in a fair season break up with a strong Plough, such as is generally used in all strong Clay grounds, the Share being rather long then broad, and the Coulter rather somewhat bending then streight and eaven according as the nature of the ground shall require,

The first enriching of barren Grounds.

which every simple Plough-man will soon find out in turning up two or three furrows; for according to the cutting of the earth, so must the Husbandman fashion the temper of his Plough.

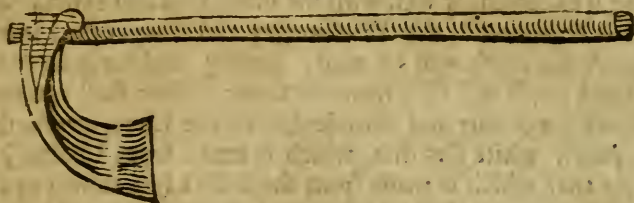
The manner
of Ploughing.

Now for the manner of plowing this bad and barren earth, if the ground lye free from water (which commonly all evil barren earths do) you shall then throw down your Furrows flat, and betwixt every Furrow you shall leave a baulke of earth half as broad as the Furrow, and so go over, and plow your whole earth up, without making any difference or distinction of lands: but if you fear any annoyance of Water, then you shall lay your Furrows more high, near, and close together, dividing the grounds into several lands, and proportioning every land to lye the highest in the midst, so that the water may have a descent or passage on either side.

Hacking of
Ground.

Now so soon as you have thus plowed up your land, and turned all the swarth inward unto the earth, you shall then take Hacks of Iron, well steeled, and reasonable sharp, such a competent number, as your purse or power can compass, or the greatness of your ground requireth: for you shall understand, that one good hacker, being a lusty labourer, will at good ease hack or cut more then half an acre of ground in a day; and with these hacks you shall hew and cut to pieces all the earth formerly plowed up furrow by furrow; and not the furrows onely, but also each several baulke that was left between, and any other green swarth whatsoever the plough had escaped, and it shall be cut into as small pieces as conveniently as you can; for thereby is your mould made much more mellow and plentiful, and your Seed at such time as it is to be cast into the earth, a great deal the better and safer covered, and much more sooner made to sprout and bring forth increase. Now for the shape and fashion of these Hacks, you shall behold it in this figure.

When



When you have thus hacked all your ground, and broke in pieces all hard crusts and roughness of the swarth, you shall then immediately, with all the convenient speed you can (because time is very precious in these labours) if you be near unto any part of the Sea-coast, or to any other Creek or River, where the salt-water hath a continual recourse, thence fetch (either on Horse-back, or in Cart, or other Tumbril, such as the nature of the Country, or your own ease can afford) great store of the salt sand, and with it cover your ground which hath been formerly plowed and hackt, allowing unto every acre of ground, three-score or fourscore full bushels of sand, which is a very good and competent proportion; and this sand thus laid, shall be very well spread and mixed among the other hackt and broken earth. And herein is to be noted, that not any other sand but the salt is good or available for this purpose, because it is the brine and saltness of the same which breedeth this fertility and fruitfulness in the earth, choaking the growth of all weeds, and bad things which would sprout from the earth, and giving strength, vigour, and comfort to all kind of grain, or pulse, or any fruit of better nature.

Sanding of
Ground.

When you have thus sanded your earth, you shall then if you have any Limestones about your grounds (as barren earths are seldome without) or if you have any quarries of stone (which are seldome unaccompanied with Lime-stone) gather such Lime-stone together, and make a Kiln in the most convenient place you have, as well for the carriage of the Lime, as for the gathering together of the stone, and having burnt your Lime, the manner whereof is so generally well known through the whole Kingdom, that in this place it needeth little or no repetition, you shall then on every Acre so formerly plowed, hackt, and sanded, bestow at least forty or else fifty bushels of Lime, spreading and

Liming of
Ground.

mixing it exceedingly well with the other sand and earth ; and herein is to be noted, that the stronger and sharper the Lime is, the better the earth will be made thereby, and the greater encrease and profit will issue from the same: neither shall you need to respect the colour and complexion of the Lime, as whether it be purely white (as that which is made from Chalke) or gray (as that which is made from the small Lime-stone) or else blackish brown (as that which is made from the great stone and main Quarry) since it is the strength and goodness of the Lime, not the beauty and colour, which brings forth the profits.

Manuring of
Ground.

Now that this Lime is of excellent use, and wonderful profit, do but behold almost all the Countries of the Kingdome where there is any barrenness, and you shall find and see how frequently Lime is used, insomuch, that of mine own knowledge in some Countries, where (in times past) there was one Bushel made or used, there is now many loads, and all risen from the profitable experience which men have found in the same.

Now, when you have thus Limed your ground, you shall then take of the best manure you have, as Oxe, Cow, or Horse-dung, Straw rotted either by the littering of beasts, or by casting upon high-ways, the mud of Lakes, Ponds or Ditches; the soyle of young Cattell made in the Winter time by feeding at stand, Heake, or any such like kind of Ordure ; and this manure or compost you shall carry forth either on Horse-back, or in Carts of Tumbrels (according as the Country will afford) and you shall lay it and spread it upon your ground so formerly plowed, Hackt, Sanded, and Limed in very plentiful manner, so far forth as your provision will extend ; for it is to be understood, that barren and hard earths can never be overladed with good manure or compost, since it is onely the want of warmth and fatness, which manure breedeth and causeth all manner of fruitfulness.

Times for all
labours.

After you have thus manured all your ground, it is to be supposed that the season of the year will be shot on, for the labour of sowing will take little less than two months, your ground being of an indifferent great quantity, except you have assistance and help of many of your friends, which is a courtesie
that

that every Husbandman may embrace, but not trust unto; for I would not with any man that hath not Tenants to command, to presume on other friends, lest they fail him, and so his work lye half done, and half undone, which is a great Character of negligence and improvidence: but let every one proportion their labours according to their own strengths, and the number of their ordinary families. The Liming of your ground will take at least half so much time as the sanding, and the Manuring rather more than less than the Liming; so that by any reasonable computation of time, beginning to plow your ground at the beginning of *May*, ere it be Hackt, Sanded, Limed, and Manured, *Michaelmas* will be come, which is the end of *September*; for I allow the month of *May* to plowing and hacking; *June* and *July* for Sanding; *August* for Liming; & *September* for Manuring. So then to proceed on with our labour, at *Michaelmas*, or from that time to the end of *October*, you shall begin to plow over that ground again which formerly you had Plowed, Hackt, Sanded, Limed and Manured; and at this latter plowing you shall plow the ground somewhat deeper then you did before; and taking a good stich (as they call it in Husbandry) you shall be sure to raise up the quick earth, which had not been stirred up with the Plough before, making your furrows greater and deeper than formerly they were, and laying them closer and rounder together then they were before; and in this order or latter earing, you shall be careful to Plough your Ground as clean as you can without balks, or other escapes in husbandry, and as you thus plow your ground, you shall have certain Hackers, with their Hacks to follow the Plough, and to cut the earth and furrows into very small peeces, as was formerly shewed in the hacking and cutting of the first arder; then so soon as your ground is thus ploughed and hackt, you shall take a paire or two of very strong and good Iron harrows, and with them you shall go over your ground, tearing that which was formerly ploughed and hackt into more small peeces than before, and raising up the mould in much greater abundance than was formerly seen; which work once finished, you shall then take your Seed which would be the finest, cleanest, and best Wheat you can provide, and after the manner of good Husbandry,

Second Plowing.

Second hacking.

First Harrowing.

Of sowing the
seed.

bandry, you shall sow it on the ground very plentifully; not starving the ground for want of Seed (which were a tyrannous penury) nor yet choaking it with too much (which is as lavish a foolery) but giving it the full due, leave it to the Earth and Gods blessing.

The second
Harrowing.

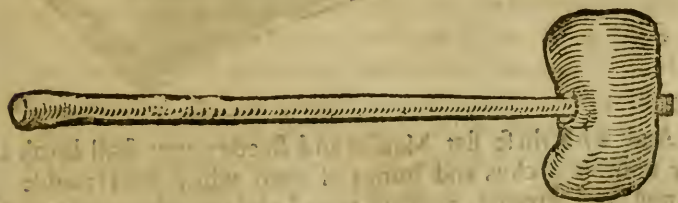
Now so soon as you have thus sown your seed, forthwith you shall take all the harrows again, harrowing the seed into the earth, and covering it close and well with all care and diligence: and in this latter harrowing, you shall have great respect to break every clot as much as you can, and so stir up and make as much mould as you can, and the finer such mould is made, the better it is, so it cover deep and close; for you shall understand, that all these kinds of barren Clayes are naturally tough, cold, and binding, whereby they stifle and choak any thing that growes within them; for the natural toughness of the earth will not give any thing leave to sprout, or if it do sprout, the binding nature thereof so fetters and locks it within the mould, that it cannot issue out; or if it do (with extreme struggling) rise through the pores of the same, yet doth the cold presently starve the root, and make the stemme utterly unable to bring forth fruit, or any profit at all, so that if the toughness be not converted to a gentle looseness, and easie dividing of it self, the coldness unto warmth, and the hard binding unto a soft liberty, there can be small hope of commodity, which this manner of dressing the earth bringeth to pass; for the mixture of the sand takes away the toughness, the Lime brings heat, and the manure comfort and liberty: As for the hacking and cutting the earth, that is, to make all the rest symbolize and mix together; for as if any by a Dispensatory make a Medicine, and cast his ingredients confusedly one upon another, without care of mixture, melting, or dissolution, shall find but a corrupt, disorderly, and ill compounded receipt; so he that dresseth and manureth his ground, and doth not by hacking, plowing, or some other Husbandry course mix the earth, and the compost perfectly well together, shall seldome find profit from his seed, or find any man of wit desirous to become his imitator. Now I must confess, that some ऐसे grounds of light and temperate nature, will mix very well and sufficiently by the help of the Plough only;

Faults in the
Earth.

only ; but this barren hard earth of which I now write, must onely be broken by this violent and extreme labour, or else there will neither be mould, earth, or any converture for the Seed, but only foul, great, and disorderly clots and lumps, through which the grain can never pass, and that which lyeth uncovered will be made a prey to fowl, and other vermine, which will hourly destroy it.

After you have sown and harrowed the ground, you shall then see if there remain any clots or hard lumps of earth unbroken, which the teeth of the harrow are not able to tear in pieces (as it is very likely you shall perceive many) for these hard barren earths which are plowed up in their green swarths, are nothing neer so easily broken and brought to mould, as are the mellow soft earths which have been formerly plowed many times before, because the hard and intricate roots of the Grass, Moss, and other quick substances growing upon the same doth bind and hold the mould so close and fast together, besides the natural strength and hardness of the earth, that without much industry and painfull labour, it is impossible to bring it to that fineness of mould which Art and good Husbandry requireth ; therefore as soon as you behold those clots and lumps to lye undiscovered, and unbroken, you shall forthwith take good strong clotting beetles, or mauls made of hard, and very sound wood, according to the proportion of this figure.

Of clotting
the Earth.

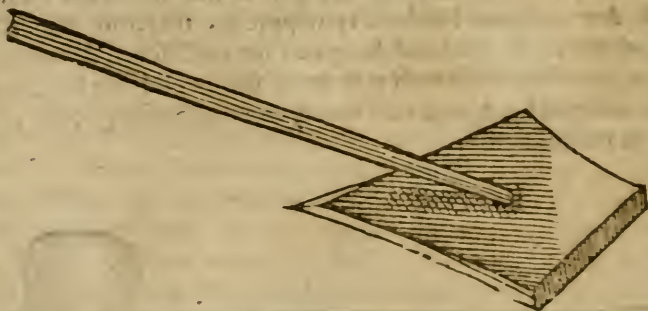


And with these mauls or clotting beetles, you shall break all the hard clots and lumps of earth in pieces, even to so small dust as possibly you can, because you are to presuppose that these clots thus hard, tough, and unwilling to be with any means digested
into.

into mould, are either not at all, or else very insufficiently mixed with the Sand, Lime, and other manures: and therefore you must rather break them that thereby they may mixe, and give easie passage to the Grain, and not like heavy poyfes and dead lumps lye and press down the Seed so that it cannot sprout.

Another manner of Clotting.

But if it so fall out, partly by the hardnesse of the ill earth, partly through the season and dryness of the year, that these clot and lumps of earth will either not be broken at all, or at least so insufficiently that the mould will not be any thing near so fine as you would have it; you shall then, having done your best endeavour, let your ground rest till there have fallen a good round shower or two of rain: which may wet the clots through and through; and then the next fair blast you shall take your clotting beetles, but not those which you took before in the dry season, but some much lighter, broader and flatter, being made of thick Ash-boards more than a foot square, and above two inches in thickness, according to this figure.



And with these flat Maules and Beetles, you shall break all the unbroken clots and lumps of earth which shall trouble or annoy your ground, making your Lands as plain and smooth as is possible, so that the grain may have easie passage forth; which labour as soon as you have finished, you shall then refer the increase and prosperity thereof unto the mercies of God, who no doubt will give his blessing according to thy labour and thankfulness.

As touching the trimming and weeding of this Corn, after *Of Weeding.* it is sprung a foot above the earth, or thereabout, you shall understand, that these hard barren grounds are very seldome troubled with weeds; for weeds, especially great, strong, and offensive weeds, are the issues of rich and fertile soils; yet, if through the trimming and making of this earth (which is not commonly seen) you do perceive any store of thistles or other grosser weeds to spring up, you shall then in the month of May, with hooks, nippers, and such like tools, cut them away, or pull them up by the roots, which indeed is the better manner of weeding.

Now here is to be understood, that your ground being thus *Several Seeds* dressed and trimmed as is before shewed, you may very well for *several years.* the two first years sow Wheat or Rye upon it, but Wheat is the greater profit and more certain seed; the third year bestowing but your fold of Sheep upon it, that is, manuring it with your Sheep, (for it is to be intended, that in these barren earths sheep are the greatest stock of which the Husbandman can boast) you may very well sow it with Barley, and have a fruitfull & plentiful crop thereon; the next three years, you may sow it with Oats; and the seventh year you may sow it with small white Garden Pease or Beans, according as you shall find the strength and goodness of the ground, (for Beans desire somewhat a richer soyl than the Pease;) then for three or four years following the seven, you may let it lye at rest for grass, and doubtless it will yield you either as good pasture, or as good Meadow as you can reasonably require. And then after the expence of this time, it shall be good that you dress and order your ground again in such sort as was formerly declared; and thus you may every year dress one or other piece of ground, till you have gone all over all your ground, or at least as much as you shall think expedient; and without faile, he that is Master of the most fruitfullest and richest soyl, shall not boast of any greater increase then you shall, only your charge may be a little more, and so shall be also your commodity, which shall make an amends for you charge: as for your toyles, yours shall be much the less, by a just computation; for though you have many labours, yet they are but Summer labours, and neither hurt your own body, nor your

Cattel; whereas the Master of the rich soyl is in continuall work both Winter and Summer, labouring twice so much to confound the superfluous growth of Weeds, as you do to beget the increase of Corn, and whereas he must ever keep a third or fourth part of his Corn ground without fruit, you shall not keep any which shall not yield you a sufficient Commodity.

Objection.

Now me-thinks I hear in this place to be objected unto me, that whereas I do prescribe the sanding of these barren earths with the salt Sea-sand and no other, (as it is true, for all other fresh sand is unavailable) what if the ground do lye so far within the Land, that there is no salt sand within many score miles of it; how then shall I make good my barren earth? sure to fetch sand so far will never equal the cost; or it may be this experience hath no further limits then to such hard and barren earths as lye alongst the Sea coast only.

Answer.

To this I answer, that albeit this salt Sea-sand be of infinite good and necessary use, inriching grounds wonderfully much, yet is not this experience of bettering of barren soiles so strictly bound thereunto, but that without any use of the same, you may make your earth as fruitful in Corn or Grasse, as hath been already formerly declared.

Ordering
Earth where
Sands want-
teth.

Therefore if your ground lye much within the Land, and far from the Sea, so that this Commodity of sand is not by any possible means to be gotten; then you shall (having first lookt into the Nature of your ground, and finding it to be by all characters and faces a cold, barren, stiff, dry Clay, yielding nothing but a short mossie Grasse, without any other burthen at all, as is seen upon most Plains, and Downs of this Kingdom) first plow it, and hack it, as was before shewed in the former part of this Chapter, then instead of sanding it, you shall lime it as aforesaid, or rather a little more plentifully, then you shall manure it, after (as at seed time) you shall plow it and hack it again, then harrow it as before said; then to every Acre of ground you shall take two bushels of very dry bay-salt, and in such manner as you sow your wheat, you shall sow this salt upon the ground; then immediately after the sowing of the salt, you shall sow your Wheat, which Wheat would be thus prepared before you sow it; the day before you are to sow your grain, you

Sowing of
salt.

shall

shall take bay salt and water, and mixing them together make a brine so strong that it will bear an Egge, then put the Wheat you are to sow into that brine, and let it steep therein till the next day, then drain it as clean as may be from the brine, and so sow, harrow it, clod it, and weed it, as was before declared, and no doubt but you shall find a marvellous great increase thereby; for this I can assure you, both from a most certain knowledge, and a most worthy Relation, that a Gentleman buying some store of Seed-wheat; and inforst to bring it home by Sea, by some casual means, some of the Sacks at the unlading, fell into the Sea, and were much drencht in the salt-water, whereat the Gentleman being grieved (as doubting some hurt to come to the seed) yet inforst of necessity to make use thereof, caused all the Wheat which was so wet to be sown by its self in a particular place, and upon the worst ground which he had, (as much despairing in the increase thereof) and it is most infallibly true, that of that wet seed, he received at least five fold more profit then of any other; and from thence it came, that this experiment of Brine and the sowing of salt hath taken place; from which the painful Husbandman hath found such infinite increase to arise, that the use thereof will never be laid down in this Kingdome. Neither is the thing it self without good and strong probability of much increase and strength for the bettering of all manner of arable grounds; for there is nothing which killeth weeds, quicks, and other offences of the ground so much as saltness: for what makes your Pidgeons dung & your Pullens dung to be better for arable grounds, then any other dung, or manure whatsoever, but by reason of the saltness thereof; by which saltness also, you may judge the strength and heat thereof, in so much that the proper taste of fire, or any hot thing is ever salt; also we say in Philosophy, that blood which carryeth the vital heat and warmth of the body is in taste salt, and so a nourisher, maintainer, and increaser of all the strength and vigour of the inward faculties; whereas Flegm, Choler, and Melancholly, which are the hurts, and confounders of the vital spirits, the first is in taste sweet, the second bitter, and the last of an earthly and dry taste, full of much loathsomeness.

The Excellency of Salt.

Now again, you shall understand, that as you thus wet or
C 2
Of steeping
steep seed in brine.

steep your Wheat seed, so you may al'o steep any other Seed ; as Barley, oats, beans, pease, lupins, Fetches, and such like ; of which your beans, pease, and lupins, you may steep more than any of the rest, and your Oats the least.

As touching Rye, it shall be good not to steep it at all, for it is a great enemy to all manner of wet and moysture, inso-much, that the curious Husbandman will forbear to sow it in any shovre of rain, bearing in his mind this ancient adage, or saying, that *Rye will drown in the Hopper* ; as on the contrary part, *Wheat would be sown so moist that it might stick to the Hopper* : Yet notwithstanding, when you do sow Rye in any of these In-lands, and cold barren Countries, where sand is not to be gotten, you shall not by any means omit the sowing of your salt before ; for it is nothing neer so moist as it is warm and comfortable.

CHAP. III.

Of the ordering, Tilling, and dressing of all rough Barren Claves, whether simple or compound, being laden and over-run with Gorse, Broom, and such like.

NExt unto these plain barren earths, which by reason of their heights, are subject in the Winter time to all manner of cold, froas, stormes, tempests, blasts, and winds, which are the perfect hinderers of all encreases and growth ; and in the Summer time to all hot scorching, scaldings, and fiery reflections of the Sunne, which on the contrary part, burneth and withereth away that little seeming increase which appeareth above the earth ; I will place that barren clay whether it be mixt or unmixt, which lying not so high, and being subject unto those hurts and offences, seemeth to be a little more fruitfull, yet either by the extreame cold moisture thereof, or the stony hardness and other malignant qualities, is no less barren than that of which I have formerly written, which indeed is that barren and vile soyle, which will neither bear corn nor grass, but is onely over-run and quite covered
over

over with great, thick, and tall bushes of Gorse or Furies, which is most sharp, woody, and gross weed, so full of pricks, that neither Horse, Beast, Sheep, nor Goats, dare thrust their noses to the ground to gather up that little poor grass, which groweth thereon. And albeit these Gorse or Furs are one way a little commodity to the needfull Husbandman, in being a reasonable good fuel, either for baking, brewing, or divers other sudden and necessary uses; yet in as much as the profit being compared with the great quantity of earth which they cover and destroy, and which with good Husbandry might be brought to great fruitfulness, it is indeed no profit at all; it shall not be amiss for every good Husbandman that is pester'd and over-laden with such ground, to seek by way of good Husbandry how to reduce and bring it to that perfection and excellency which may be best for his own particular commodity, and general good of the Kingdome wherein he liveth.

Then there is another kind of soile which is nothing at all differing from this, but is every way as barren and sterile, (which is as noysome a weed as the former) and though it have not such sharp prickles as the other, whereby to hinder the grazing of Cattel, yet doth it grow so close and thick together, and is naturally so poisonous and offensive to grass, that you shall seldome see any grow where this Broom prospereth; besides, the bitterness thereof is so unpleasant and distastfull to all kind of Cattel, that not any will ever crop or bite upon the same, only if it is of some necessary use for the poor Husbandman, in respect that it serveth him both for fuell, for thatching and the covering of his houses, (being for that purpose, of all, the longest lasting) and also for the making of Beesoms for cleaning of the house and barnes, or else for sale and commodity in the Market; all which profits (as before I said) being compared with the loss of the ground, and the goodness that might be reaped from the same, are indeed truly no profits but hindrances.

Therefore I would wish every man that is Master of such grounds, whether they be over-run with Gorse, Furies, Broom, or any such kind of gross, woody, or substantial weed, first to cut
up.

Destroying of Weeds. up the weed (of what sort soever it be, whether Gorse, Furs or Broom) as close and neer to the ground as you can possibly , and then making them up in sheafs or bigge faggots , carry them home, and stack them up very dry, so as no rain may enter or pierce into them, for the smallest wet will rot and consume them to dirt and filthiness ; which done, you shall make Labou- rers with hacks , picks and such like tools, to rub up all the roots which you left in the ground, even to the very bottom of the same ; and these roots you shall be very careful to have stubbed up exceeding clean , by no means leaving (so near as you can) any part or parcell of the roots behind you ; then these roots thus stubbed up, you shall diligently gather together into little heaps , as bigge as Moal-hills, and place them upon the ground a pretty distance one from another, and so let them lye till the Sun and Wind have dryed them : for it is intended, that this labour must begin about the latter end of *April*, and be- ginning of *May*.

Burning of
Bait.

Then so soon as you find these roots are thorowly dried, you shall pile them handsomely together, laying them a little bol- low one from another , and then with a hack cut up some of the same earth , and therewithall cover all the roots quite over, only leaving a vent hole at the top, and on one side , and so let the hills rest two or three dayes, till the earth be a little parcht, and dried, then take fire and some other light dry fuel which is aptest to blaze, and with the same kindle every hill, not leaving them till you see them perfectly on fire ; which done, let them burn both day and night. till the substance being wholly con- sumed, the fire go out of it own self, and this in some Coun- tries is called the *Burning of Bait*.

Breaking of
the burnt
Earth.

Now as soon as the fire hath been extinguished for two or three dayes, you shall then come, and with shovels (& beetles to break the hard burnt earth in pieces) you shall spread all the ashes clean over the ground ; which done, you shall with a very long plough tear up the earth into great and deep furrows, and divide it into Lands, as you shall think meet and convenient , laying them higher, and flatter, as you shall have occasion; and as the ground lyeth more or less within the danger of water , whether it be the over-flowing of some neer Neighbouring Brooks,

Brooks, or Rivers, or else other standing water occasioned by Rain and extraordinary Showres, which must be carefully lookt unto; because all over-flows and inundations of water is a mighty destroyer and consumer of grain; but these barren grounds of which I now write, are very seldome oppress'd with water; for most commonly they lye so high, that the continuall dryness thereof is a strong occasion of the much unfruitfulness.

Causes of unfruitfulness.

After you have thus burnt your bait, and plowed up your ground, you shall then with your hacks hack it into small pieces, in such manner as was declared in the former Chapter; then you shall (if the Sea be any thing near you) sand it with salt sand (as before said) then lime it, and after, manure it either with Ox-dung, Horse-dung, rotten Straw, mudd of Ponds and Ditches, the spitling of House-floores, or sweeping of Channels and Streets, or such like; or for want of all these, in case you dwell neerer unto the Sea-coast (where manure for the most part is in greatest scarcity, and the hardest to come by) you shall gather from the bottom of the rocks (where the seydege of the Sea continually beareth) a certain black weed, which they call Hemp-weed, having great broad leaves, and growing in great abundance, in thick tufts, and hanging together like pease-straw; and with these weeds you shall cover your lands all over of a pretty good thickness, and then forthwith you shall plow it again somewhat deeper, and with somewhat greater furrows than before, raising up the new quick earth to intermingle, and mix with those manures and helps which thou hast formerly prepared and laid upon the ground; then you shall again hack it, and harrow it; then you shall take Pigeons dung, or Pullens dung (that is, any kind of land fowl whatsoever, but by no means any water fowl) or Pigeons dung and Pullens dung mixt together, and allowing to every acre two or three bushels thereof, which is the true quantity of seed proportioned for the same, and this dung being broken and masht into small pieces, you shall put into your Syclop or Hopper, and in the same manner as you sow your corn, you shall sow this dung upon the ground, and then immediately after it you shall sow your Wheat, either steeped in brine, or else salt Sea-water, or unsteeped as you shall think good; but in case you can neither get salt

An Excellent Manure.

Of Plowing.

Of divers Manures.

sand.

Mixture of
Manures.

sand nor Sea Rock-weeds, then you shall by no means omit the steeping of your Seed ; neither shall you fail before you sow your Seed, to mix with your pigeons and pullets dung, a full equal part of Bay-salt well dryed and broke, and so sown with the dung upon the land, and then the seed after it ; which done, you shall harrow it again, clot it, sleight it, and smooth it, in such sort as was formerly declared in the former Chapter, for these labours have no alterations, but must in all points be done as was before set down.

Of weeding.

Now touching the weeding of this earth, after the Corn be-
ginneeth to grow about the ground, there is no fear to be had either of Thistles, Tares, Cockles, Darnel, Docks, and such like strong weeds, which indeed are the issues of good grounds ill ordered and handled ; but the weeds which you shall most fear in this place, is young Gorse, or Furrs, or else young Broom, which are very apt to grow from the least part or parcell of roots that shall be left behind ; Nay, the very nature of those barren earths is such, that of its own accord it will bring forth those weeds: the cold sharpness of the air mixing with the sterility & roughness of the earth, being the cause that it will give life to no other better plants ; therefore so soon as you shall behold any of them to appear above the earth, though they be not half a finger high, you shall presently with all diligence pull them up by the roots, and cast them away, or lay them in heaps that they may be afterwards burnt, and the ashes sprinkled upon the ground : And herein is to be observed, that the younger and the sooner that you do pull up these weeds, the better it is, and the easilier they will come from the earth, and the sooner be destroyed : for all these mixtures wherewith already you have been taught to mix your earth, are in themselves such naturall enemies to all these kind of barren weeds, that should you omit the manual labour of destroying them (which no good Husband willingly will do) yet in time the earth of it self, and the often plowing of the same would leave no such offence of weeds, or other growths which might hinder the corn.

Time for
Weeding.

Now touching the best time when to pull away these weeds, though generally it must be done as soon as they do appear above the ground ; yet it shall not be amiss for you to defer the
work

work till after a showre of rain, and then immediately after the ground is wet) and so by that means more apt and willing to open and forsake the root fastned within it) you shall with all diligence pull them out of the ground, and destroy them : neither shall you pull them out of the ground with your hands only ; for the Gorse have exceeding sharp pricks, so that with your naked hands you are not able to touch them, and to arm your hands against them, with strong thick gloves, would be too boisterous and combersome, so that sometimes you might either misse the weeds, and pull up the corn ; or else pull up the corn and weeds both together ; therefore to prevent all these casualties or hinderances, you shall take a pair of long small wooden Nippers, made after the form of this figure.



And with these you shall pull the weeds out of the ground, and cast them into the furrows by the sides of the Land, till your dayes work be finished, and then with a rake you shall rake them together, and so lay them in heaps to dry and wither, in more convenient places; that when time shall serve, you may burn them, and use them, as was before declared.

Lastly, you shall have great respect, that if this ground be very much troubled with loose stones, as flint, pibble, and such like, that then you very carsefully get them gathered from the ground; both before and after you have plowed it, and to lay them on heaps in other vacant places, where they may serve for pavings, and such like purposes when time requireth : but if the ground be over-run with great, or else small Limestones, as for the most part these barren grounds are ; then shall you with all care gather them up, and lay them in great heaps in some corner of your field, where you may make a convenient Lime kiln, and so there burn these stones thus gathered, which will be

Gathering of
stones.

both an infinite profit, and an infinite ease to the rest of your labours.

CHAP. IV.

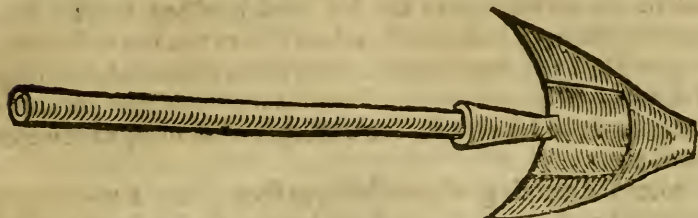
Of the ordering, Tilling, and Dressing of all rough barren Claves, whether simple or compound, that are over-run with Whinnes, or such like.

NEXT unto this barren Clay, which is over-run with Furse, Broom, and such like, I will place that barren and unfertile earth, being also a Clay, whether simple or compound; which is over-run onely with Whinns, and indeed bearing little or no other burthen, or if it do bear any other burthen as some little short mossier grass, yet is that grass so covered over with these sharp Whinns, that not any beast dare put his nose to the ground, or bite upon the same; and indeed this kind of earth is not any whit at all less barren than those of which I have already written, but rather more, in that the malignant qualities thereof are not so soon corrected, nor yet the vertues so soon restored.

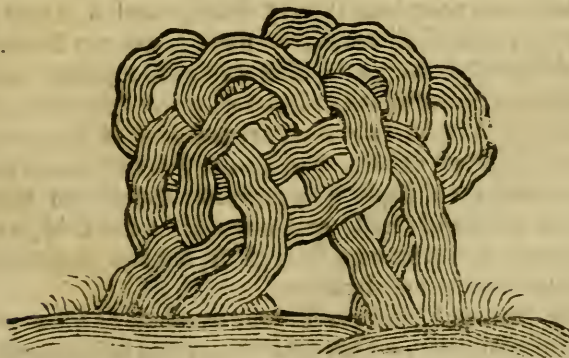
What whinnes
are.

Whinnes are a certain kind of rough dry weeds, which grow bushie and thick together, very short and close unto the ground, being of a dark brown colour, and of crooked growth, thick and confused, and full of knots, and those knots armed with hard, long sharp pricks like thorns or bryars, they have little brown leaves which shadow the pricks, and do wind their branches so one into another, that they can hardly be separated, yet is not their growth at any time little more than a handfull above the earth, only they spread exceedingly, and will runn and cover over a whole field, choaking up all sorts of good plants whatsoever, and turning the best grass that is, to moss and filthiness: wherefore if at any time you be Master of any such naughty and barren ground, and would have it reduced unto goodness and fertility, you shall first take a fine thinn paring shovel made of the best Iron, and well Steeleed, and hardened round about the edges, according to the form of this figure following.

And:



And with this paring-shovel, you shall first pare up all the upper swarth of the ground, above two inches, or an inch and a half thick at the least, and every paring would be some three foot in length at the least, and so broad as the shovel will conveniently give it leave, and this swarth thus pared up, you shall first turn the Whinny or Grass-side downward, and the earth side upward and so let it lye two or three dayes in the Sun to dry (for this work is intended to begin in the month of *May*) and when that side is well dried, you shall turn the other side, and dry it also, then when all the swarth is dried, you shall gather six or seven peeeces together, and turning the Whinny or Grass side inward and the earth side outward, you shall make round hollow little hills thereof, much according to the fashion of this Figure following.



And the inward hollownes like unto the hollownes of an Oven, but much less in compass ; which done, you shall fill the hollownes with dry chips, or small sticks, or Furse and Straw

mixed together, which you shall put in at the vent-hole which shall be lett on one side of the hill, and kindling it with fire, you shall burn all that swarth in such sort as you burnt the roots of your Furse and Broom before; for this is also called a burning of bait, as well as the former; for it is a most principal nourisher of the earth, and a very sudden destroyer of all malignant weeds whatsoever.

Breaking of
Baits.

After the burning of your hills, as soon as the fire is utterly quenched and gone out, and no heat at all left in the hills; you shall then with clotting beetles beat them all down to dust, and then with shovels you shall spread the ashes quite over all the ground, as was before declared in the former Chapter: and herein is, to be noted, that you must place these hills as thick and close together as by any means possibly you can, making your hills so much the less and lower, that they may stand thicker and nearer together, and so cover more ground, and thereby the heat and strength of the fire to disperse it self over all that peece of ground; for the fire burning upon the earth, doth as much good for the enriching of the earth, and destroying of the weeds, as the ashes doth which are spread upon the same.

Mowing.

Now after your bait is in this manner burned and spread; you shall then (as before shewed) plough up your ground in good large furrows, then hack it very small, Sand it, Lime it, and manure it; and of all manures, there is not any better for this ground than Oxe-dung, and ashes well mixt together; of which ashes, those of bean-straw, Pease-straw, or any other straw are best; and those of Wood; or Fern next, and those of Sea-coal, or Pit-coal are the worst of all. Swines dung is not much amiss for this ground, for though it be a greater breeder of weeds and thistles in good and fertile grounds, yet in this cold, hard, and barren earth it worketh no such effect, but is a great comforter and warm moistner of the same.

After you have thus made your ground, as soon as Wheat seed-time commeth, which is the latter end of *September*, and beginning of *October*, you shall then with great care plow over your ground again, and take great respect that you turn up your furrows much deeper than before, and that for two special causes.

causes; the first, that the new earth may the better be mixt with the old earth; and those helps that are added thereunto; and secondly, that you may be sure to tear up the roots of all the Whinns from the very bottom of the earth, not suffering any part of them to remain behind, and for this purpose it shall not be amiss to have an idle boy or two to follow your plow, and to gather away all the roots that shall be torn up, or any way else left bare above ground, which roots shall be laid on heaps in convenient places, and then after burnt, and the ashes thereof spread upon the ground: which will be a very great comfort unto the seed, being a speedy help unto the sprouting thereof, and a very warm comforter of the root after the stemme is spindled above ground, for in these cold barren earths nothing doth so much spoyl and slay corn, as the dead coldness which lyeth at the root thereof; for in many of these unfertill places, you shall see Corn at the first sowing- (whilst there is a little strength in the ground) sprout in great abundance, promising much hope of the profit: but when it should spindle and come to much better perfection, that poor strength being spent and consumed, and the cold and dryness of the soyl, having as it were overcome all matter of comfort, then presently you shall see the blade of the Corn turn yellow, the stemm or stalk to wither, and either put forth no ear at all, or else a very poor little empty one, being laden with nothing but a most dry chaffie husk without substance. But to come again to our purpose, after you have thus plowed up your ground the second time, you shall then hack it again, and harrow it, as was declared in the former Chapters; then you shall take your seed-wheat which hath been steeped either in brine or Sea-water, and to every bushel of that seed you shall add a bushel of bay-salt, and mix them very well together in your Hopper or Sydlop, and so sowe them together upon the ground, observing to double your cast so oft, that you may not fail to cast that true quantity of seed into the earth, which otherwise you would have done, if so be there had been no mixture at all; for to do otherwise were to deceive the ground, and a handfull of seed so saved would be the loss of a peck in the time of Harvest; therefore have great respect that your ground have his due; for it is no

more cost, though it be a little labour.
 Harrowing. When your seed is sown, you shall harrow it again the second time, clot, smooth it, and sleight it, as was before declared in the former Chapters.

Weeding. As touching the weeding of this ground, it is the least labour of all other, for the earth being so corrected as is before shewed, it will naturally of it self put forth no weeds, especially if you remember to plough it deep, and be sure to tear up and gather away all the quick roots, otherwise if that labour be any thing neglected, then will it put forth both Whins and great store of other rough weeds, which as soon as you shall perceive to appear, you shall presently with your wooden nippers pull them up by the roots, as was at large declared in the foregoing Chapter.

Profits. Now for the general profit of this ground thus made and prepared, it is the same that the two former are, that is to say, it will bear you good and sufficient Wheat, in plentiful abundance for the space of two or three years; then barley a year after; then Oats three years together after the barley; and pease or beans a year after the oats; then Lastly, very good Medow or Pasture for the space of three or four years after, and then you shall begin and dress it again, as was formerly declared.

CHAP. V.

Of the ordering, Tilling, and Dressing of all barren Clayes. whether simple or compound, which are over-run with Ling or Heath.

Here followeth now successively another sort of barren earth, which indeed is much more sterile and barren than any of the other formerly written upon; because they, out of their own nature, do bear a certain kind of grass or food which will relieve ordinary hard store-Cattel, whether it be Sheep, Goats, or young Beasts: But this earth, of which I am now to entreat, beareth no grass at all, but only a vile filthy black brown weed, which we call Ling, or Heath, the tender tops whereof Cattel and wild Deer will sometimes crop, yet it is to them but little relief, and only maintaineth life and no more.

Now

Now albeit some may object unto me, that this kind of soyl is ever a sandy soyl, and no clay, as may be seen in most Chases, Forrests, and Down; yet I answer, that albeit it hold so in general, yet there are divers clays, especially in mountainous Countries, that are pestered with these kind of weeds, as may be seen in the North, and North-west part of *Devonshire*, in some parts of *Cornwall*, and in many parts both of North and South *Wales*; and these clay grounds which are thus offended with these weeds of Ling, or Heath, are much more barren and unfruitful than the Sands, because of their much more coldness; yet those clayes which are mixed with either black Sand, dun Sand, or yellow Sand, and over-run with Heath or Ling, are the most barren of all. To make any further description of this Heath or Ling, being a thing so notoriously known over all this Kingdome, I hold it meerly needless, only to say it is a rough brown weed, shooting out abundance of stalkes from one root, with little dark leaves, and flowers on the top, of a pale reddish colour, much inclining unto Peach colour at the first: but being full blown, they are then a little more whitish.

You therefore that have any such ground, and desire to bring it to fruitfulness, and bearing of good Corn and Grass in a reasonable abundance, you shall first with sythes or sharp hooks (but old sythes are the better) cut down all the Heath, or Ling, which groweth upon the earth you intend to convert to goodnesse, so neer the ground as possibly you can; then when it is cut down (which would ever be at the beginning of the Month of *May*) you shall let it lye upon the ground, daily tolling, and turning it till it become very dry, then spreading it all over the ground, and mixing or covering it with dry straw of any kind whatsoever, you shall presently set it on fire in so many several corners of the field, that all the several fires in the end may meet in one poynt, and not leave any part of the mowen Heath or Ling unburnt, or any part of the ground unscorched; After this is done, and the ground cooled, you shall with your flat clotting beetles beat the ashes hard into the ground, then you shall take a strong plow, with a broad winged share, and an eaven coulter, and you shall plow up all this ground thus burnt

Destroying, off
Heath.

Another burning of Baite.

in very large and deep furrowes, by no means picking out any of the quick roots which sha'll remain in the furrows so turned up, but letting them rest in the earth still; then with your backs, and the help of your Iron paring shovel, you shall cut up the furrows, formerly turned up, into short pieces, of three foot, or three foot and a half long, and some less as occasion shall serve: then with these pieces, you shall build little hollow hills, such as in the former Chapter you made of the upper swarth of the ground only; and then filling the hollownes with dry heath, and dry straw mixt together, you shall set every hill on fire, and so burn the very substance of the earth into ashes, which will soon be done by reason of the infinite number of roots and small strings, which lye mixt in the earth, and the dryness thereof occasioned by the former burning: And this is another kind of burning of Baite, much differing from all the former, and yet to as great end and profit as any whatsoever; and these hills must, as the former, be placed one as near another as is possible, so as they may spread and cover over the greatest part of the ground, and leaving no more than a good reasonable path to pass between hill and hill.

Now as soon as you have burned all your Baite, and that your hills are cold, you shall then as was before shewed in the former Chapter, with beetles and shovels break down the hills, and spread the earth and ashes over all the ground; which done, you shall sand it (if the situation of the ground be answerable thereunto) and lime it in such sort as was shewed in the second Chapter; then when it is limed, and the lime equally spread, not more in one place than in another, you shall then manure it with the best manure you can provide, of which there is none better or more proper for the ground than mans ordure, and the rubbish, sweepings, parings, and spitlings of houses mixt together: for want of this (because it may not be in so great plenty as other manures) you may take either old Oxe dung, or Horse dung, or for want of them the old rotten and muddy saddles or bottomes of Corn stacks of Reeds, especially Pease-stacks, or Bean-stacks, provided that it be thoroughly rotten; for the less rotten it is, the worse it is. Also the scourings of common Sewers, and especially those through

through which much of mans urine doth pass, is a most wonderful and beneficial manure for these grounds; so are also the scowring of sinks and channels, which come from Kitchens and wash-houses, where great store of brine and salt broath is shed, and other greasie, fat, and putrified substances, as also abundance of sope-suds, and buck-ashes, and other sope and lee-washings, than which, there is no better manure that can be used for these kind of grounds.

After your ground is thus perfectly made and manured, and that Wheat-seed time doth draw on, which (as before was shewed) is ever at the latter end of *September*, you shall then plow up your ground again in that manner as was shewed for the former earths, to wit, much deeper than before: for you are to understand, that this ground being drest, as is before declared, there will nothing remain of the furrows which were first plowed up but the ashes, which being covered with sand, lime, and manure, the earth will lie plain and level, so that of necessity you must raise up new furrows of new earth, which being done, you shall then with your hacks, cut all the new earth into very small pieces, mixing them well with the other mould made of sand, lime, manure and ashes; then as was before said, you shall harrow it to make the mixture so much the better, and the mould so much the finer: and then if it have been sanded, you may sow your seed-wheat simply of it self, without any doubt of the plentiful increase thereof; but if it have not been sanded, then as in the foregoing Chapter, you shall not only steep your Seed in brine (as before shewed) but also you shall mix your Seed with Bay-salt, and so sowe into the ground; or if at the time of sowing (after it is plowed, hackt, and harrowed) you bestow either Pigeons-dung, or Pullens-dung, or Sheeps-dung upon the Land, it will be much better, and the Corn will give a much greater increase. Now as soon as you Land is sown, you shall forthwith harrow it again, and cover the Seed very close; then you shall clot it, smooth it, and sleight it (as was before shewed.)

As touching the weeding and cleansing of this earth after the Weeding. Corn is sprung up, you shall understand that there is great care to be had thereunto, for this ground is much subject unto weeds,

and those of the worst kind : for although for the most part it will be free from all manner of soft and tender weeds, as thistles, cockle, darnel, ketlocks, docks, rape, and such like herbal stuff, yet it is much subject to twitch-bryars, which grow at both ends, Ling, Wilde-time, and such-like, any of which as soon as you shall see to appear, or peep above the earth, you shall presently with your Nippers pull them up by the roots, and not suffer them in any wise to look a handful above the ground ; for if you do, their hardness is so great, and their roots so large and fast fixt into the mould, that you can by no means pull them away without great loss and hurt to the grain, pulling up with them all such roots of Corn, as shall be fixt near about them : for any other weak and superfluous things which shall grow from the Land, you may with ordinary weeding hooks cut them away ; as for long grass, whether it be soft or sedge, or any other such-like stuff, you shall not stir it, but let it grow : for it keepeth warm the roots of your Corn, and giveth nourishment and increase thereunto. Now for the profit of this Soil thus ordered and husbanded, it is equal with any of the former, and will bear Wheat very plentifully for the space of the three first years ; good Barley the fourth year with the help of the sheep fold (as was before said) and good Oats the fifth, sixth, and seventh years ; and very good small Pease, the eighth year (for beans this Soyl will very hardly bear at all) and the ninth, tenth, and eleventh year it will bear very good meadow (though not altogether very fine pure grass, yet very good feeding and wholsom grass) or so good pasture as a man can reasonably require for any holding Cattle whatsoever ; nay, it will also indifferently well feed, and fat Cattle, though peradventure it requireth a little longer time than other finer ground will.

C H A P. VI.

Of the ordering, Tilling and Dressing of all plain simple barren Sands, bearing nothing but a short m-ssie grass.

HAVING thus (in as large manner as I hope shall be needful for any judicious or indifferent Reader) written of the Natures, Orderings, Plowings, and Dressings of all manner of barren

ren and unfruitful Clays, whether they be simple of themselves, or else compounded with other earths, as Sands, Chalks, Gravels, and such like; shewing by those natural burthens which continually of their own accord they do produce (which indeed is the easiest and safest way of knowledge) how to amend and better them, and bring them to that perfection of fruitfulness that the best earth shall but in a very small degree exceed them, nay, nay hardly any thing at all, except in the saving of a little charge and some labour, without which nothing is to be obtained by the Husbandman; neither is this charge or labour thus bestowed on these barren Grounds to be grutcht at by any honest mind; since the worst crop of ten or eleven will make good his charge and toil with a reasonable Interest; so that I make account, nine or ten years profits come into his Barns without purchase; for it is to be intended, that all these earths formerly spoken of, are not to be drest, or to put the Husbandman to any charge more than the first year of ten or eleven, for the second year he shall as soon as he hath gathered his Wheat off, which will be in *August*, and finish other parts of his Harvest, presently put his Plow into the same Wheat-ground again, and plow it up, hack it, and harrow it, sow it, harrow it again, clod it, and weed it, as in the former year, and so consequently of all the rest of the years following; whereby you perceive that all labours and charges are saved more than once plowing and sowing.

This then considered, it necessarily now followeth that I speak of the bettering, and bringing into perfection of all manner of barren sand Grounds, being simply of themselves, without any mixture of other earths, except one and the same kind; as sand with sand, though peradventure the colours of the Sands may alter, as red with white, yellow with black, &c. which in as much as the whole substance is sand without any contrary mixture; there it may well be called simple and not compound; and of these Sands, I purpose to treat, as formerly I did of the Clays, that is to say, by their outward faces and Characters, which are those burthens and increases, which of their own proper nature, without any help or compulsion of any other, they produce and bring forth into the world.

Plowing.

And first of that naughty cold and barren Sand, which lying upon high, stony, and mountainous Rocky places, or else upon lower cold bleak Plains, subject to the North, and North-East winds and tempests, or bordering upon the Seas, doth not bring forth any thing but a short mossie grass, which the Sun maketh bitter, and the cold dewes fulsome and unsavory in taste. If any man then be Master of such unprofitable and unfruitful earth, and desire to have it brought to goodness, and perfection, you shall first, at the beginning of the Spring, as about middle *April*, or earlier, with a strong Plow answerable to the Soil, yet somewhat less, both in Timbers and Irons, then that wherewith you plow your Clay ground, plow so much of that earth up as you may conveniently compass, to sowe and dress exactly, and perfectly; for to undertake more, were to make all unprofitable, and to cast away much labour and charge, without any profit. This ground you shall plough of an indifferent depth, though not so deep as the Clays, you shall lay the furrows, though flat, yet close one to another, without leaving any bulk between, but ploughing all very clean, yet not so very clean and close together, that you may lay the green swarth, to the new ploughed or quick earth; but rather turn one swarth against another, so as the furrows may lie, and no more but touch the edges one of another: This when you have done, you shall then with your hacks, cut and break all the earth so turned up into very small pieces; and not only the earth so turned up into very small pieces, but also other green swarth which was left unplowed; provided that before this labour of hacking, you let the ground lie certain days in the furrows, that one swarth heating and scalding the other, they may both equally rot and grow mellow together: which once perceived by the blackness thereof, you may then at your pleasure hack it, and cut it, as is before declared.

Objection.

Now some may in this place object unto me, That this labour of hacking should be needless, in as much as all sand grounds whatsoever are out of their own nature so light, loose, and willing to dissever, that this toyl might very well and to good purpose be saved.

Answer.

To this I answer; That true it is, most Sands in their own na-
tures.

tures are loose and light, and willing to dis sever into fine mould without any extremity, especially rich and fruitful Sands, whose predominant quality of warmth, giveth nourishment and increase : But these barren and cold Sands, in which is a certain flegmatique toughness, and most unwholsom driness, are of a clean contrary nature, and through the stony hardness thereof, they are as unapt to break and dis sever, as any Clay whatsoever : besides, the swarth being of a tough mollie substance, (which ever carrieth a hard strong root answerable with the cold in which it is engendred) doth so constantly bind, fetter, and hold the mould together, that it is impossible for any harrow to break it in pieces, or to gather from it so much mould as may serve to cover the Corn, and give it root when it is sown into the same : And therefore this work of hacking is necessary.

When therefore you have thus hackt your Land, and distributed the mould into many small pieces, you shall then with all expedition Marle it; which forasmuch as it is no general nor common practice in every part of this Kingdom, I will first tell you what Marle is, and then how to find it, dig it, and use it for your best behoof.

Marle, you shall then understand, is (according to the definition of Master Bernard Palissy) a natural, and yet an excellent Soil, being an enemy to all the weeds that spring up of themselves, and giving a generative vertue to all seeds that are sown upon the ground : or (for the plain Husbandmans understanding) it is a certain rich, stiff, and tough clay, of a glewy substance, and not fat or Oily, as some suppose. This Marle is in quality cold and dry, and not hot (as some would have it) and it was earth before it came to be Marle, and being made Marle, yet it is but a Clay ground; all Chalk whatsoever was Marle before it was Chalk, and all manner of stones which are subject unto Calcination or burning, as Lime-stone, Flint, or the like, were first Marl before they were stones, & only hardned by accident, and so not possible to be dissolved but by the fire; as for Marle it self, when it is a little hardned, it is only dissolved by frosts, and nothing else; and thence is the cause that Marle ever worketh better effect the second year than the first.

This Marle hath been made so precious by some Writers, that

¶

Additions:

it hath been accounted a fifth element, but of this curiosity I will not now dispute.

Touching the Complexions or Colours of Marle, there is some difference; for though all conclude there are four several colours in Marle, yet one saith, there is a White, a Gray, or Rustet, a Black and Yellow; another saith, there is a Gray, a Blew, a Yellow, and a Red; and a third saith, there is a Red, and White, mixt like unto Porphery. And all these may well be reconciled, and the colours may alter according to the climate and strength of the Sun: So that by these Characters, the Colour, the toughness, and the looseness when it is dried, any man of judgment may easily know Marle, from any other earth whatsoever. This Marle is so rich in it self, and so excellent for continuance, that it will maintain and enrich barren grounds, the worst for ten years, some for a dozen, and some for thirty years; yet there is a great respect to be had in laying of this Marle upon the ground, that is to say, that you lay it neither too thick nor too thin, that you have it neither too much, nor too little; for any of these extremities are hurtful; and therefore hold a mean, and see there be an indifferent mixture between the Marle and the earth, on which it is laid.

For the general finding out of this Marle, there is no better way for readines, and the saving of charges, than by a great Augur or Wimple of Iron, made to receive many bits, one longer than another, and so wringing one after another into the ground to draw out the earth, till you find you are come to the Marle, which perceived, and an assay taken, you may then dig at your pleasure.

Now for the places most likely where to find this Marle, it is commonly found in the lowest parts of high Countries, near Lakes and small Brooks, and in the high parts of low Countries, upon the knolls of small hills, or within the Cliffs of high Mountainous Banks, which bound great Rivers in: To conclude, you shall seldom find any of these barren Sands, but they are either verged about with Marle Grounds, or if you will bestow the labour to dig below the Sand, you shall not fail either to find Marle, or some Quarry of stone, or both; for in some places Marle lieth very deep, in other some places within

a Spades graft of the upper swarth of the earth : therefore it shall be good for you to make proof of all the most likely parts of your Ground to find out this Marle ; and as soon as you have found it out, you shall with Mattocks and Spades dig it up and carry it to your land , there laying it in big round heaps, and setting them within a yard or two one of another : thus when you have filled over all your Ground (which would be done with as great speed as might be ; for the antient custom of this Kingdom was, when any man went about to Marle his ground, all his Tenants, Neighbours and Friends would come and helphim to hasten on the work) you shall then spread all those heaps, and mixing the Clay well with the Sand, you shall lay all smooth and level together ; and herein is to be observed, that if the land you thus Marle shall lie against the side of any great Hill or Mountain, whereby there will be much descent in the ground ; then you shall (by all means) lay double as much Marle, Sand, or other compost on the top of the Hill as on the bottom, because the rain and showers which shall fall, will ever wash the fatness of the earth down to the lowest parts thereof.

Now in the laying of your Marle, you are to hold this observation, That if you lay it on hard and binding grounds, then you are to lay it in the beginning of Winter : but if on grounds of contrary nature, then it must be laid in the Spring, or Summer. Again, you shall observe, that if you cannot get any perfect and rich Marle, if then you can get of that earth which is called Fullersearth, and where the one is not, commonly ever the other is, then you may use it in the same manner as you should Marle, and it is found to be very near profitable.

When your ground is thus Marled (if you be near to the Additions.
Sea-side) you shall then also sand it with salt Sea-sand, in such Observations.
sort as was formerly declared, only you may forbear to lay altogether so much upon this Sand ground as you did on the Clay ground, because an half part is fully sufficient. If you cannot come by this Salt-sand, then instead thereof, you shall take Of Chalk and
Chalk, if any be to be had near you, and that you may lay in the use.
more plentiful manner than the Sand ; and albeit it is said,
that.

that Chalk is a wearier out of the ground, and maketh a rich father, yet a poor son, in this Soil it doth not so hold, for as it fretteth and wasteth away the goodness that is in the Clay grounds, so it comforteth and much strengthneth the sand-earths: and this Chalk you shall lay in the same manner as you did your Marl, and in the same manner spread it and level it; which done, you shall then Lime it, as was before shewed in the Clay grounds; yet not so abundantly, because also a half part will be sufficient: after your Liming, you shall then manure it with the best manure you have, whether it be dung of Cattle, Horse, Sheep, Goats, Straw, or other rubbish; and that being done, and Seed-time draweth on, you shall then plow up your ground again, mixing the new quick earth and the former Soyls so well together, that there may be little distinguishment between them: then you shall hack it again, then harrow it; and lastly sow it with good, sound, and perfect Seed: and of Seeds, though Wheat will very well grow upon this earth, yet Rye is the more natural and certain in the increase; yet according to the strength of the ground, you may use your discretion, observing that if you sow Wheat, then to steep it before in brine or salt Sea-water, as was before described; but if you sow Rye, then you shall sow it simply without any helps, except it be Pigeons-dung, or Bay-salt simply of it self, in such manner as hath been before declared, either sowing the salt with the Corn, or before the Corn, as shall seem best in your own discretion.

After your seed is sown, you shall then harrow it again, clot it, smooth it, and sleight it, as before is shewed in the second Chapter; which done (after the Corn is shot above the earth) you shall then look to the weeding of it, being somewhat a little too much subject to certain particular Weeds, as are Hare-bottles, wild Chess-bolls, Gypsie-flowers, and such-like, any of which, when you see them sprung up, you shall immediately cut them away close by the roots; as for tearing their roots out of the ground with your Nippers, it is not much material, for the cutting of them is sufficient, & they will hardly ever again grow to do you any hinderance; many other weeds there may grow amongst these, which are also to be cut away, but these are the principal, and of most note; whereof as soon as you have cleaned

fed your lands of these and the rest, you shall then refer the further increase of your profit unto Gods Providence.

Lastly, you shall understand that this ground being thus plowed, dressed, and ordered, will without any more dressing, but once plowing and sowing, every year bear you good Wheat or good Rye three years together; then good Barley the fourth year; good Oats, the fifth, sixth, and seventh years; excellent good Lupins the eighth year, and very good Meadow or Pasture three or four years after, and then it shall be necessary to dress it again in such manner as was before described. The profits.

C H A P. VII.

Of the Plowing, Tilling, Ordering, and Inriching of all barren Sand, which are laden and over-run with Braken, Fern, or Heath.

NExt unto this plain, cold, barren Sand, which beareth no other burthen but a short mossie Grass, I will place that Sand which is laden and over-run with Braken, Fern, or Heath, as being by many degrees more barren than the former, both in respect that it is more loose and less substantial, as also in that it is more dry and harsh, and altogether without nutriment, more than an extreme sterile coldness, as appeareth by the burthen it bringeth forth, which is Braken or Fern, a hard, rough, tough weed, good for nothing but to burn, or else to litter store Beasts withal, for the breeding of Manure; or if you throw it in the High-ways where many Travellers pass, it will also there turn to good reasonable compost.

Of this kind of ground, if you be Master, and would reduce it unto fertility and goodness, you shall first, whether the braken be tall and high (as I have seen some as high as a man on Horseback) or short, and low (and indeed most commonly these barren earths are, for tall Fern or Braken shews some strength in the ground) you shall with sythes first mow it down in the month of May, then wither it and dry it upon the ground, and after spread it as thin as you can over all the earth you intend to plow; which done, you shall bring your plow and begin to plow the ground after this order: first you shall turn up your furrow,

F

and

and lay flat to the ground, green-swarth against green swarth, then look how broad your furrow is so turned up, or the ground so covered; and just so much ground you shall leave unplowed between furrow and furrow, so that your land may lie a furrow and a green balk, till you have gone over all the ground; then you shall take a paring-shovel of Iron, and pare up the green swarth of all the balks between the furrows at least two inches thick, and into pieces of two or three foot long, and with these pieces of earth, and the dry Fern which is pared up with them, you shall make little round hollow bait-hills, as in the third or fourth Chapters, and these hills shall be set thick and close over all the ground, and so set it on fire and burn it; then when the fire is extinct, and the hills cold, you shall first with your hacks cut in pieces, all the furrow that were formerly turned up, and then break down the burnt hills, and mix the ashes and earth with the other mould very well together; which done, you shall then with all speed marle this earth as sufficiently as possibly may be, not scanting it of Marle, but bestowing it very plentiful upon the same; which done, you shall then plough it over again, and plowing it exceeding well, not leaving any ground whatsoever untorn up with the plow; for you shall understand, that the reason of leaving the former balks, was that at this second plowing after the Marle was spread upon the ground, the new, quick, and unstirred fresh earth might as well be stirred up to mix with the Marle, as the other dead earth and ashes formerly received, whereby a fresh comfort should be brought to the ground, and an equal mixture without too much driness, and this second Ardor or Plowing would begin about the latter end of *June*.

Of Marle.

Sanding and
Lining.

After your ground hath been thus marled, and the second time plowed, you shall then sand it with salt Sea-sand, Lime it, and manure it, as was declared in the foregoing Chapter: and of all Manures for this Soil, there is not any so exceeding good as sheeps-manure, which, although of the Husbandman it be esteemed a Manure but for one year, yet by experience in this ground it hapneth otherwise, and is as durable, and as long lasting a compost as any that can be used, and besides, it is a great destroyer of Thistles, to which this ground is very much subject, because

cause upon the alteration of the ground the Fern, is also naturally apt to alter into Thistle, as we daily see.

When your ground is thus dress'd, and well order'd, and the Seed-time cometh on, you shall then plough it again in such manner as you did the second time, that is to say, very deep, Cle, and after the manner of good Husbandry, without any rest, balks or other disorders; then shall you hack it very well, then harrow it, and then sowe it, but by mine advice, in any case, I would not have you to bestow any Wheat upon this Soil, (except it be two or three bushels on the best part thereof, for experience-sake, or provision for your household) for it is a great enemy unto Wheat, and more than the marl: it hath no nourishment in it for the same, because all that cometh from the salt-Sand, Lime, and Manure, is little enough to take away the natural sterility of the earth it self, and give it strength to bear Rye, which it will do very plentifully; and therefore I would wish you for the first three years only to sowe the best Rye you can get into this ground; the fourth year, to sowe Barley; the fifth, sixth, and seventh, Oats; and of Oats, the black Oat is the best for this ground, maketh the best and kindest Oat-meal, and feedeth Horse or Cattle the soundest; as also it is of the hardest constitution, and endureth either cold or driness much better than the white Oat, the cut Oat, or any Oat whatsoever; the eighth year you shall only sowe Lupins, or Fetches; and three years after you shall let it lie for Grass, and then dress it again as before-said; for it is to be understood, that in all the following years (after the first year) you shall bestow no labour upon this ground, more than plowing; sowing, hacking, and harrowing at Seed-time only,

Plowing and
Sowing.

But to proceed to the orderly labour of this ground, after you have sown your Rye, you shall then harrow it again, clot it, smooth it, and sleight it, as was before shewed in the second Chapter of this Book. And although a man would imagine that the sandy looseness of this Soil, would not need much clotting or sleighting of the Earth, yet by reason of the mixture thereof with the Marl and Manure, it will so ho'd and cleave together, that it will ask good strong labour to loosen it, and lay it so hollow and smooth, as in sight it should be.

Labour after
Sowing.

Weeding.

Touching the Weeds which are most subject to this Soil, they are Thistles and young Brakes, or Ferns, which will grow up within the Corn, which, before they rise so high as the Corn, and even as it were at the first appearing, you must with your wooden Nippers pull up by the roots, and after take up and lay in some convenient place where they may wither and rot, and so turn to good Manure.

C H A P. VIII.

Of the Plowing, Tiling, Ordering, and Enriching of all barren Sands, which are laden and over run with Twitch, or Wild Bryar.

HAVING written sufficiently of this hard and barren, waste, wild, sandy ground, which is over-run with Braken, Fern, Heath, and such like. I will now proceed, and unto it joyn another Sand which is much more barren, and that is the Sand that bringeth forth nothing but wild Twitch, Bryars, Thorn-bush, and such like under-growth, of young milking wood, which never would rise or come to profit, the bitter cold driness of the earth wherein it groweth, and the sharp storms to which the Clime is continually subject both day and night, blasting it in such manner, that nothing appeareth but steeved, withered, and utterly unprofitable burthens, good for nothing but the fire, and that in a very simple sort. Such grounds if you be Master of, and would reduce it to profit and fruitfulness, you shall first with hooks, or axes cut up the upper-growth thereof, that is, the bushes, young Trees, and such like; then you shall also stub up the Roots, not leaving any part of them behind in the earth, carrying away both home to your house to be employed either for fuel, or the mending of the hedges, or such like, as you shall have occasion; this done, you shall take a pair of strong Iron harrows, and with them you shall harrow over all the earth, tearing up all the Twitch, Bryars, and rough grass so by the roots, that not any part but the bare earth may be seen; and when your Harrows are cloyed, you shall unlade them in several places of the ground, laying all such rubbish of weeds, and other stuff which the Harrows shall gather up in a little round

Destroying of
Twitch and
Bryar.

round hill close up together, that they may sweat, wither and dry; then spreading them abroad, and mixing them well with dry straw, burn them all over the ground, leaving no part of the weeds or the grass unconsumed, then, without beating in of the ashes, you shall presently plow the ground all over very clean as may be, laying the turrows as close as you can to one another, and leaving no earth untoucht or untorn up with the plough; which done, you shall immediately hack it into small pieces, and as you hack it, you shall have idle Boys to go by the hackers, to gather away all the roots which they shall loosen or break from the mould, and laying them on heaps on the worst part of the ground, they shall there burn them; and spread the ashes thereon; after your ground is thus harrowed, plowed and hackt, you shall then muck it, as was formerly shewed in the sixth Chapter; then shall you sand it, lime it, and manure it as before-said.

Now of Manures, which are most proper for this Soil, you shall understand, that either Oxe, or Horse-manure, rotten straw, or the scouring of Yards is very good, provided that with any of these Manures, or all these Manures, you mix the broad-leaved weeds, and other green weeds, which do grow in Ditches, Brooks, Ponds, or Lakes, under Willow-trees, which with an Iron Rake, Drag, or such like Instrument, you may easily draw upon the Banks, and so carry it to your Land, and there mingle it with the other manure, and so let it rot in the ground; this Manure thus mixed is of all other most excellent for this Soil, both by the experience of the Antients who have left it unto memory, as also by daily practise now used in sundry parts of this Kingdom, as well because of the temperate coolness thereof, which in a kindly manner asswages the lime and sand, as also through moisture, which distilling through those warm Soils, doth quicken the cold starved earth, and giveth a wonderful encrease to the Seed, that shall be thrown into the same.

After your ground is thus sufficiently drest with these Soils Harrowing, and Manures, you shall then plow it again the second time, and other labours, which would be after Michaelmas; after the plowing you shall then hack it again, and be sure to mix the earth and the manures very well together, then you shall break it in gentle manner with a

with your Harrows, and then sowe it; which done, you shall harrow it much more painfully, and not leaving any clots or hard earth unbroken that the Harrow can pull in pieces: as touching the Seed, which is fittest for this earth, it is the same that is spoken of in the next foregoing Chapter; as namely, the best Rye, or the best Maslin, which is Rye and Wheat equally mixt together; or if there be two parts Rye, and but one Wheat, the Seed will be so much the more certain and sure holding, and this Seed you may sowe on this ground three years together; then Barley, then Oats, and so forth, as is formerly writ of the grounds foregoing. After your ground is sown and harrowed, you shall then clot it, sleight it, and smooth it as you did the other ground before; and then lastly with your back Harrows (that is, with a pair of Harrows, the teeth turned upward from the ground, and the back of the Harrow next unto the ground) you shall run over all the ground, and gather from the same all the loose Grass, Twitch, or other Weeds that shall any ways be raised up, and the same so gathered you shall lay at the Lands ends in heaps, either to rot for manure, or else at the time of the year to be burnt for ashes, and sprinkled on the earth the next Seed year.

Lastly, touching the weeding of this Soil, you shall understand the Weeds which are most incident thereunto, are all the same you first went about to destroy; as namely, Twitch, rough wild Grass, and young woody under-growth, besides, Thistles, Hare-bottles, and Gyple-flowers; therefore you shall have a great care at the first appearance of the Corn, to see what Weeds arise with it (for these weeds are ever fully as hasty as the Corn) and as soon as you see them appear, both your self and your people with your hand shall pull them up by the roots, and so weed your land as you would weed a Garden, or Wood ground. Now if at this first weeding (which will be at the latter Spring, commonly called *Michaelmas*, or the Winter Spring) you happen to omit and let some weeds pass your hands unpulled up (which very well may chance in so great a work) you shall then the Spring next following (seeing them as high, or peradventure higher than the Corn) with your wooden nippers pull them up by the roots from the ground, and so cast them away.

As touching the cutting them up close by the ground with ordinary weed-hooks, I do in no sort allow it; for these kind of weeds are so apt to grow, and also so swift in growth, that if you cut them never so close in the Spring, yet they will again over-mount the Corn before Harvest, and by reason of their greatness, toughness, and much hardness, choke and slay much Corn, that shall grow about them; and therefore by all means you shall pull these weeds up by the roots whilst they are tender (if possible you can) or otherwise in their strongest growth, sith their sufferance breedeth great loss and destruction.

C H A P. I X.

Of their Plowing, Tilling, Ordering, and Enriching of all barren Sands, which are over-run with Moors, or moorish stinking long Grass.

UNTo these foregoing barren Sands, of which I have already written, I will lastly joyn this last barren sand, being of all earths, whether Clay or Sand, the most barren. And that is that filthy, black, moorish Sand which beareth nothing but stinking putrified Grass or Moss, or Moss and Grass mixed together, to which not any Beast or Cattle, how coulsly or hardly bred soever, will at any time lay their mouths; and this kind of ground also is very much subject to marishes and quagmires, of which that which is covered with Moss or Grass, is the worst, and that which is tufted above with Rushes, the best, and soonest reduced unto goodness: In brief, all these kind of grounds generally are extremely moist and cold, the superabundance whereof is the occasion of the infinite sterility and barrenness of the same.

And therefore he that is Master of such unprofitable Earth, and would have it brought to some profit or goodness, shall first consider the situation of the Ground, as whether it lie high or low; for some of these marish grounds lie low in the Valleys, some on the sides of Hills, and some on the tops of Mountains: then, whether the much moistness thereof be fed by River, Lake, or Spring, whose veins not having current passage through, or upon the earth, spreads lookingly over all the

the face thereof, and so rotting the mould with too much wet, makes it not only unpassable, but also utterly unprofitable for any good burthen.

Grounds for
Fish-ponds.

Now if you find that this marish Earth lie in the bottom of low Valleys, as it were guarded about with Hill, or higher grounds, so that besides the feeding of certain Springs, Lakes, or Rivers, every shower of rain or falling of water from higher grounds bringeth to these an extraordinary moisture to maintain the rottenness, in this case this ground is past cure for grass or Corn, and would only be converted, and made into a fish-pond, for the breeding and feeding of Fish, being a thing no less profitable to the Husbandman for keeping his house, and furnishing the Markets, than the best Corn-lands he hath; and therefore when he maketh any such Pond, he shall first raise up the head thereof in the narrowest part of the ground, and this head, by driving in of stakes, and piles of tough and hard wood, as Elm, Oak, and such like, and by ramming in of the earth hard between them, and sadding them so fast that the mould can by no means be worn down, or undermined with the water, he shall bring it to as firm earth as is possible, and in the midst of this head he shall place a sluice or flood-gate made of sound and clean Oak timber, and plancks, through which at any time to drain the Pond when occasion shall serve; and this done, you shall dig the Pond of such depth, as the earth conveniently will bear, and casting the earth upon either side, you shall make the Banks as large and strong as the ground requireth; then if any Spring which did before feed the earth be left out of the compass of the Pond (because it lieth too high to be brought in) then shall you by drawing gutters or drains from the Spring down to the pond, bring all the waters of the springs into the Pond, and so continually feed it with fresh and sweet water. Then storing it with fish of best esteem, as *Carp*, *Tench*, *Beam*, *Pearch*, and such like. and keeping it from weeds, filth and vermine, there is no doubt of the daily profit.

But if this marish and low ground, though it lie low, and have many springs falling upon it, yet it lieth not so extreme low but that there is some River or dry Ditches bordering upon it, which lie in a little lower descent, so that except in case of inun-

inundation, the river and ditches are free from the moisture of this ground, but where there is any over-flowing of waters, there this marsh ground must needs be drowned ; in this case, this ground can hardly be made for Corn, because every over-flow putteth the Grain in danger, yet may it be well converted to excellent pasture or meadow, by finding out the heads of the Springs, and by opening and cleansing them, and then drawing from those cleansed heads, narrow drains or furrows, through which the waters may pass to the neighbours ditches, and so be conveyed down to the low Rivers : leaving all the rest of the ground dry, and suffering no moistures to pass, but what goeth through these small deep Channels ; then, as soon as Summer commeth, and the ground begins to harden, if you see any of the water stand in any part of the ground, you shall forthwith mend the drain, and help the water to pass away ; which done, (as the ground hardneth) you shall with hacks and spades lay the swarth smooth and plain, and, as early in the year, as you can conveniently, you shall sow upon the ground good store of Hay-seeds, and if also you do manure it with the rotten staddles or bottoms of hay-stacks, it will be much the better, and this saddle you shall not spread very thick, but rather of a reasonable thinness, that it may the sooner rot and consume upon the same.

But if this marsh and filthy ground do not lye so low as these low valleys, but rather against the tops of hills ; you shall then, first open the heads of all the springs you can find, and by several drains or sluices, draw all the water into one drain, and so carry it away into some neighbouring ditch and valley ; and these drains you shall make of a good depth, as at least two foot, or 2 foot and a half, or more, if need require, and then cross-wise every way overthwart the ground, you shall draw more shallow furrows, all which shall fall into the former deep drains, and so make the ground as constant, and firm as may be : then having an intent to imploy it for corn, you shall bring your Plow into the ground, being a very strong one, and not much differing in Timber-work, or Irons from that which turneth up the Clay-grounds, and laying before the Plow long waddes, or roulds of the straw of Lupins, Pease, or else Fetches, (but Lupins is

Draining of
wet grounds.

the best) you shall turn the furrows of the earth with the plow upon the wades, and so cover or bury them in the mould, and thus do unto every furrow, or at least unto most of the furrows you turn up, and so let it lye a little time to rot, as by the space of a fortnight or three weeks, in which space, if the ground receive not rain and moisture enough to rot the straw thus formerly buried, you shall then by stopping the drains, making the Springs over-flow, gently wash the ground all over and no more, and then presently drain it again; which done, as soon as the earth is dry, you shall hack it, and break it into small pieces, and then you shall also sand it, lime it, and manure it.

And lastly, you shall Marl it, but if no salt sand be to be had, then instead of it you shall chalk it, yet of all the rest you shall take the least part of chalk.

This done, about the latter end of *July* you shall plow up the ground again with somewhat a better and deeper stich than you did before, that if any of the straw be unrotted, or unconsumed, it may again be raised up with the new moyst earth, and so made to waste more speedily; and if at this second carrying you do see any great hard clots to rise, then with your hacks you shall break those hard clots in pieces, laying the Land clean without clots, weeds, or any other annoyance, and so let it rest till *October*, at which time you shall plough it over again, hack it, harrow it, and then sow it with the best Seed-wheat; for this soyl thus drest and manured, albeit it be of all other the most barren, yet by reason of this moisture, which at pleasure may be put to it, or taken from it, and the mixture of these comfortable soyles and composts, it is made as good and fruitful as any earth whatsoever, and will bear Wheat abundantly for the space of three years together, then good Barley the fourth year, with a little help of a Sheep-fold, or Sheeps manure: then Rye the fifth year; Oats the sixth, the seventh and eighth years; small Pease the ninth year; good meadow or pasture three years following, and then to be new drest again, as before-said.

Now as soon as your Seed-Wheat is sown, you shall then **Harrowing.** harrow the ground again, and be sure to cover the Wheat both deep and close; as for the clots, which shall arise from this soyl,

it shall not matter whether you break them or no, for by reason of their moisture, they will be plyant and easie for the Wheat to pass through, so that you shall not care how rough your land lye, so it lye clean, and the Corn well covered; but for all other seeds, you shall break the clots to dust, and lay the land as smooth as may be.

Now for the weeding of this soyl, you will not be much troubled therewith, because this ground naturally of its own accord putteth forth no weeds, more than those which are ingendred by the new made fruitfulness thereof, and those weeds for the most part are a kind of small sedge, or hollow reed; any of which if you see appear, or with them any other kind of weed, you shall at the first appearance, either pull them up by the roots with your wooden nippers, or else cut them close by the ground with your weed-hooks.

Weeding.

CHAP. X.

A general way for the enriching of any poor arable ground, either Clay or Sand, with less charge than formerly.

IF the former demonstrations and instructions which I have shewed thee, appear neither too difficult, or too costly (for now I speak to thee plain, simple, poor Husbandman) and yet thou art master of none but barren earth, then thou shalt by thine own industry, or the industry of thy Children, Servants, and such like, or by contracting with Taylors, Botchers, or any poor people that will deserve a penny, gather up, get or buy all the rags, shreds, old base pieces of woollen cloth whatsoever, which are onely cast; and fit for nothing but the Dung-hill, and of these thou canst compass but a sackfull, or a sackfull and a half, it is sufficient for the dressing of an acre of arable ground. These shreds and rags (torn small) or hackt and hewed into small pieces or bits, thou shalt thinly spread over the land before fallowing time, then coming to fallow, plough them all into the ground, & be sure to cover them, then give your land the rest of its ardors, as stirring, soyling, ridging, &c. in their due seasons, and after an husbandly manner: then when you come to sow it, you shall take



Rags of woollen cloth.

Steeping of
seed corn.

the slimie thick water which commeth from dung-hills, or for want thereof, water in which Cow-dung hath been steeped, and therein you shall steep your seed-corn; that is to say, if it be barley, you shall steep it for the space of thirty six hours, or thereabouts; if it be Wheat, but eighteen hours; and if it be Pease, but twelve hours; for Rye, or Oats, not at all: and the seed thus steeped, you shall sow it according to good Husbandry, and there is no doubt of wonderfull increase.

Or any pulse.

There be others which take the Seed-corn, and steeping it in good store of Cow-dung, and water, stir all together for an hour in the morning, and an hour at night, and then being settled, drain the water from the seed and the dung, and the next morning sow the corn and the dung both together on the land, being sure not to scant the Land of Seed, and no doubt the increase will be wonderfull.

Now if this cannot be conveniently done, or that you want dung, if then you take ordinary water, and therein steep your seed, it is good also, and especially for barley, and is approved by daily experience.

Shavings of
Horn.

But now me-thinks, I hear the poor man say, that here is but one acre dress'd, and that is a small proportion; to this I answer, If thou beest able but to dress one acre with these woollen raggs, thou shalt then search among the Horners, Tanners, Lanthorn-makers, and such like, and get all the wast shavings of horn which thou canst possibly compass, as before of the rags, so of these a sack and a half, or two sacks will dress an acre: these shavings which are indeed good for no other use, you shall scatter upon the land as you did the rags, then plow them in after the same manner, so order the ground, so sow, and in the same manner steep the seed, and questionless the increase will be wonderfull great: These manures will last five years without renewing. Now if of these you cannot get sufficient to trim all your ground, you shall then deal with Butchers, Sowle-women, Slaughter-men, Scullions, and the like; and from these you shall get all the hoofs you can, either of Oxe, Cow, or Bull, Calf, Sheep, Lamb, Deer, Goats, or any thing that cheweth the cud, and which indeed, if not for this use, are otherwise utterly cast away to the dunghill, and despised: And these hoofs

Hoofs of cat-
tall.

you

you shall cut and hew into small pieces, and scatter thick upon your land at fallowing time, then plow them in, as foresaid, and do in all points as with the other manures already recited, and so steep your seed, and there cannot be a greater enricher of arable ground, whatsoeyer.

Now if all these will not yet compost your land, you shall then see what sope-ashes you can get, or buy, for of all manures there is none more excellent, for besides, it giveth an exceeding strength and fatness to the Land; it also killeth all manner of weeds, great and small, as Broom, Gorse, Whinnes, and the like, and it killeth all manner of Worms, & venemous creeping things; it is excellent for Wood, & the ground renewed yearly therewith, may be sown continually: These sope-ashes must be laid on the Land after fallowing, and then stirred in; two load thereof will serve to dress an acre: when it is fit for seed, the seed must be steeped as aforesaid, and then sown, and the increase will quit the charge manifold. These sope-ashes are also excellent good for Hemp, and Flax, being thinly sown upon the Land, after it is plowed, and immediately before the Seed be sown: but if you have more Land to dress, then you must make use of your own ordinary manure, as is Oxe-dung, Horse-dung, and the like, which that you may make richer and stronger than other, wise of its own nature it would be, you shall cause continually to be thrown upon it, all your powdred beef broth, and all other salt broths or brines, which shall grow or breed in your house; also all manner of soap suds, or other suds, and washings, which shall proceed from the Laundry, and this will so strengthen and enrich your manure, that every load shall be worth five of that which wanteth this help. There be divers other manures, which do wonderfully enrich and fatten all manner of barren grounds, as namely, the hair of beasts hides, (which for the most part, Tanners and Glovers do cast away,) this thinly spread on the Land, and plowed in, brings every year a fruitfull crop. Again, if Braken, or Fern be layed a foot thick upon the earth, and then a layer of earth upon it, then another layer of braken, and a layer of earth upon it, then another layer of braken, and another layer of earth, and so layer upon layer, till the heap be as bigg as you intend it, and so left to rot all the Winter following, there cannot be a better

Of Wood:

The enriching
of ordinary
manure.

The hairs of
beasts hides.

Of braken.

To rot dung
quickly.

manure for any arable ground ; for you shall understand, that the earth will so rot the braken, and the braken so soak into the earth, that they will become both one rich substance. And herein you shall note, that whensoever you would have any substance (of what condition soever) quickly to rot, and turn to manure, that the only way is, to mix it with earth, and that will in short space bring it to rottenness. - Now this braken and earth thus rotted, you shall lay upon your land as you do your ordinary dung of Cattel, and then sow your seed being steeped as aforesaid,

Of Malt-dust.

Next, your Malt-dust, which is the sprout, come, smytham, and their excrements of the Malt, as an excellent manure for arable land, allowing three quarters thereof for an acre, and strowing it upon the land after it is plowed, and ready to be sown.

Of Rotten
Pilchers and
garbage.

There is another manure which albeit it is not plentiful every where, yet in some places it is, and not inferior to any manure before spoken of, and that is your rotten Pilchers after the oyl is taken from them, & the carcasses cast to the dungill, this laid on the land, and plowed in, bringeth Corn in great abundance; and no less doth the carcasses, and garbage of all kind of fish whatsoever, especially of sea-fish.

Of blood of
fals.

Lastly, the blood entralls, and offall of any beast, is an excellent manure of any kind of grain, plant, or tree, but especially for the Vine, for to it there is no nourishment of greater force or efficacy : also, if this blood be tempered with lime, it is exceeding comfortable for grain, and destroyeth worms, and other creeping things, which hurt Corn, only it must not be applyed presently, but suffered for a little time to rot, lest the too much heat thereof might scorch and do hurt to the root of the Corn : this manure is to be laid on the earth when you sow it, & sow the seed, and it harrowed or plowed in together ; which done, after the order of good workmanship, there is no doubt of the encrease.

CHAP. II.

*How to Enrich for Corn, any barren, rough, woody ground,
being newly stubbed up.*

IF you have any barren woody ground, which is newly stubbed up, and that you would convert it to arable, you shall then take a great quantity of the underwood, or worst brush wood which was cut from the same, and in the most convenient place in the field, as in the midst, or near thereabout, you shall frame it into a broad hollow pile, and then cover it all over with great sods of earth, which done, set fire on it, and leave no part thereof (either wood or earth) unburnt, then take those ashes and spread them all over the field, so far forth as you mean to plough up, then with a good strong plough fallow the ground as deep as you can, and so let it rest till it be almost *May*, then take either Fern, Stubble, Straw, Heath, Furrs, Sedge, bean stalks, or any other wast growth, take I say, either any one, or more of these, or altogether, as you stand posselt of them, and burn them to ashes, and therewith cover your land the second time, and then in summer stirr it within a Month, after soyl it, then at the beginning of *October*; or a little before, plough it again, and sow it with Rye the first crop, and you shall see the increase will be very plentiful; the next year you may sow it with Wheat, the third year with Barley, the fourth year with Pease, Lupins, Fetches, or any other pulse, and then begin with Wheat again; for it is credibly said, that this manner of dressing these barren, woody grounds, shall maintain and keep the earth in good heart, and strength in the worst places, for the space of four years, in that which is in any thing reasonable for the space of six years, and where there is any small touch of fertility, for the space of sixteen years; of which there are daily experiences in *France*, about the Forrest of *Arden*, and some with us here in *England*, in many woody places.



Wood ashes.

Ashes of Fern.
Straw, &c.

CHAP. XII.

The manner of reducing and bringing into their first perfection all sorts of grounds, which have been over-flowed, or spoiled by salt-water, or the Sea-breach, either arable or pasture, as also the enriching, or bettering of the same.

The difficulty
of this labour.

The vertues
of Salt.

return to 207 A
208, 209, 210

The vices
which come
from Salt.

There is nothing more hard or difficult in all the art of husbandry, then this point of which I am now to intreat; as namely, the reducing and bringing unto their first perfection all sorts of grounds, which have been over-flowed, or else spoiled by the Sea-breach, and bringing in of too great abundance of salt-water, which to some men of little experience, and free from those dangerous troubles, may appear a matter very sleight, and the wound most easie and curable; and the rather, because in all my former relations, and demonstrations, touching the bettering of ever severall sort of ground, I do apply, as one of my chiefeft ingredients, or simples, by which to cure Barrenness, Salt-Sand, salt-weeds, salt-water, salt-brine, Ashes, Lime, Chalk, and many other things of salt nature, as indeed all the manures and marles whatsoever, must either have a salt quality in them, or they cannot produce fruitfulness, so that to argue simply from natural reason; If salt be the occasion of fruitfulness, and increase, then there cannot be much hurt done by these over-flows of the salt-writer, that it should rather add a fattening and enriching to the ground, then any way to impoverish it, and make it incapable of growth or burthen. But experience, (which is the best Mistress) shews us the contrary, and there is nothing more noisome and pestilent to the earth, then the super-abundance, and too great excess of saltness; for according to our old Proverb, of *omne nimium*, that too much of every thing is vitious, as we see in the state of man's body, that your strongest physicians, as *Antimony*, or *Sibium*, *Coloquintida*, *Rhubarb*, and the like, taken in a moderate measure, are almost healthfull, and expell those malignant qualities which offend the body, and occasion sickness; but taken in the least excess that can be devised, they then (out of their vitious and naughty qualities) do suddenly and violently destroy all heat, and bring upon the body

body inevitable death, and mortality ; so is it with this matter of salt, and the body of the earth ; for as by the moderate distributing thereof, it correcteth all barren qualities, disperseth cold, and naughty vapours, and yieldeth a kind of fatness and fruitfulness, whereby the Seed is made more apt to sprout, and the ground more strong or able to cherish the same, till it come to perfection, through the sharp, warm, and dispersing quality thereof ; so being bestowed in too great abundance and excess, whereby the earth is surfeited, and as it were overcome, and drowned up with too much of this natural goodness, and helpful quality, then all his proper vertues turn to egregious vices, as his wholesome sharpness to a fretting, gnawing, and destroying greediness, his comfortable warmth to a consuming and wasting fierceness, and his gentleness in dispersing to an infectious and venomous pollution, by the joynt qualities of all which together, the ground is made neither fit to receive any thing from the hand of the Husbandman, nor yet to produce or bring forth any of it self, because every good quality is abused or expelled, and nothing but unnaturalness, and sterility left, which like a Serpent lodgeth in the ground, and will suffer no good thing to have society with it : And these are the effects and mischiefs which are occasioned by these Sea-breaches, or inundations of the salt-water.

The abuse of
salt in excess.

It is certain, that although in the salt marshes, where the Sea cometh in at certain times, and only washeth or sprinkleth the ground all over. and so departeth, there is neither want of grass, nor yet complaint of any evil quality in the grass ; yet it is most certain, that no overflow of Salt-water, how little or moderate soever, can be truly said to be wholesome for any kind of grass-ground whatsoever ; for grass is compounded of an infinite world of plants and simples, and most of them of several natures and qualities, so that it give nourishment to one, yet it may destroy ten ; neither do I find it by any of the Antients, simply and properly applied unto the grass grounds, but first unto the arable, in which having spent its primary, or first strength upon the seed, (which is a great and greedy devourer, or cater up of the strength, and fatness of the earth) it then prepares and makes the ground more able and fit to bring

Of salt moderately used.

No overflow of salt water good for grass.

The grounds
of the salt
Marshes.

A true cause
of barrenness.

Where this
annoyance is
incurable.

Where it is
curable.

forth grass, and that of the best and finest kind : for although the Masters of the Salt-marshes find a singular and rare profit in those grounds for the feeding, breeding, fattening, and sustaining of their great Flocks of Sheep ; which upon these Salt grounds, they say they will never rot or perish by that universal Disease ; yet they must not impute it to the great quantity, goodness, or any growth in the grass, but to the salt which they lick up in the grass, and to the salt quality of the grass, which is not only an Antidote or preservative against that noysom and pestilent mortality, but also a delightful and pleasant food wherein those Cattle take more contentment than in any other thing whatsoever ; so that I must necessarily rest upon this Conclusion, that as more moderate washing and overflowing of Salt-waters are no certain or particular great helps unto grass-grounds, especially if they be applied thereunto, and to that purpose simply at the first, without any other preparative or working by a former means, as by tillage, digging, delving, or the like ; so the exceeding great Inundation, or Sea-breaches which lie long soaking and sinking into the earth, must needs be a certain infallible, and almost incurable cause of barrenness, eating, spoiling, and consuming the very roots of all manner of plants, trees, and growths, by which the ground is made utterly incapable of generation or bringing forth : and therefore where these great inundations or over-flowings cannot be either prevented or avoided, but as the seasons of the year, they do and must hold their courses ; there I would not wish any man to bestow either his labour or his cost, for it is loss of time, and loss of substance : but where it is to be prevented or avoided by industry, or that those over-flowing or Sea-breaches come and happen by casualty or change, as either by the unnaturalness and superabundance of Tides being driven in by the violence and impetuosity of outrageous winds, or by any neglect or breach in the Sea-wall, or other mishaps of the like nature, which hapneth sometimes scarce once in an Age, at the most not above once or twice in many years ; in these cases there is most certain remedy, and the ground so spoiled and wasted, may by art and industry be again reduced and brought to the former perfection and goodness ; nay, many times amended and
fixed.

freed from many faults and sterile qualities, to which it was either naturally addicted, or else by chance and accident grew thereunto, by continual wearing and imployment without rest or refreshing, by the artificial means of wholsom manures, or other strengthenings which ought to be applied before those faults grow in extremities.

Now touching the cure of these grounds which are thus worn out, decayed and made barren by these inundations of Salt-water, the owner thereof is first to draw into his consideration, that as the malignity and evil quality of the earth is grown by too much fretting, gnawing, and wasting of the Salt, so it must be allayed and qualified by a quite contrary condition, which is freshness: the contrary then to Salt-water, must of necessity be fresh-water, so that you are to cast about your judgment; and by the view, situation, and level of the ground (which for the most part can have but little difficulty in it, because these grounds upon which the Sea thus breaketh, must ever be the lowest of all other, so that a true descent coming unto it, and a true ascent coming from it, there is no hardness to convey any water-course thereunto) look how to bring a freshness which may conquer and overcome this fatness, and that must therefore be fresh water, which by channels, ditches, furrows, sluices, and the like you may bring from any fresh river, spring, pond, or other fresh-water course (though removed some distance of miles from the place to which you would convey it) to the very place to which you desire to have it, and with this fresh water you shall walk and gently drown over so much of your spoiled ground as you shall be able reasonably to deal withal, in other crops and labour for that year; and if you have plentiful store of fresh water, then having (as I said) drowned it over gently, about four inches, or half a foot deep, you shall so let it lie two or three days, then drain away that water by the help of back ditches, or by sluices made for that purpose, which if the situation of the ground deny you, and that there is no such convenient conveyance, then you shall in the lowest part of the ground (either joyning upon some other spoiled ground, or upon the Sea-wall or bank) place a Coy, which may either cast the water into the other ground, or else over the wall

The manner
of the cure.

One contrary
helps another.

The watering
with fresh
water.

How to draw
away the fresh
water.

How oft to
drown the
earth.

and bank into the Sea ; and having thus drained away the first water, you shall then open your sluices of fresh water again, and drown your ground over the second time, and do in all things as you did before, and thus according to the plentifulness of your fresh water, you shall drown your ground, or at least wash it over with fresh water twice a week, before the beginning of the Spring ; and if the Salt-water have lain long, or be but new departed, then you shall use your fresh water, for some part of the Spring also.

Helps, if fresh
water be want-
ing.

Whether brack-
ish water be
wholesome.

Now some may object unto me here, (and it is a matter altogether unlikely) that in some of these places, where these Inundations and Breaches are, it is impossible either to find fresh water, and to bring fresh water unto them, because all the springs for many miles about, being made naturally blackish, and the rivers by the infection of the salt tides, having lost the greatest part of their sweet freshness ; the Question now resteth, whether these brackish waters are wholesome for this purpose, I, or No ? To this I must needs answer, That they cannot in any wise be good for those spoiled grounds, because the earth naturally of an attractive and drawing condition, sucking and gathering unto it self any that is of a sharp sweet, or sower taste, and especially saltness ; so that being covered with those brackish waters, it will draw from them only their salt, (of which it hath too much already) and no part of the freshness which should qualifie and amend it : therefore, if either your ground be thus situated, or your necessities thus unsupplied, it is better, that you rather forbear this labor of washing or drowning your earth, (though it be the first, the speediest and surest cure of all other) than by watering it with infinite and unwholesome waters, rather encrease the mischief, than any way delay it.

The first time
of plowing, &
the observati-
ons therein.

How to mix
earth.

After you have watered your ground, (if it be a work possible to be attained unto) or otherwise neglected, (it being a thing not possible to be found) you shall then about the latter end of *March*, plow up all the ground with a good deep ditch, turning up a large furrow, and laying it into lands, raise them up as much as you can, and make them round, then look

of what nature or temper the earth is, as whether it be fine sand, rough gravel, stiff clay, or a mixt earth, or any of these contraries together: If it be a fine sand, either white, red, or brown, it matters not whether, then you shall take any clean earth which is free from these salt washings, being of a mean or small stiffness, and likewise of as mean and little richness, which being digged out of some bank, pit, or other place where least loess is to be had, you shall carry it in tumbrils or carriages to the new plowed ground, and there first lay it in heaps as you do manure; then after spread it over the Land, and being dry, with clotting beetles break it as small as you can possibly; for this hungry Clay being of no rich and fat condition, will so suck and draw the salt into it, that it will take away much of the evil quality, and mixing his tough quality with the loose condition of the sand, they will both together become apt for fruitfulness and generation.

If the spoiled ground be a rough hard gravelly earth, then you shall mix or spread upon it the best and richest fresh Clay you can get, or if there be any such fruitfulness near about you, then with a good blew Marle, for that is the coolest and the freshest, and will the soonest draw out the salt from the gravel, and give it a new nourishment, whereby any Seed shall be fed and comforted which is cast into it.

The mixture
of Gravel.

If the spoiled earth be of its own nature, a stiff and tough Clay, which is but seldom found so near the Sea-shore, then after the plowing you shall mix it, and cover it over with the freshest and finest Sand that you can possibly get, for that will not only separate the Salt from the Clay, and take away the natural toughness and stiffness of the same, which hindereth and suffocated the tender sprouts, so as they cannot easily get out of the earth, but also by lending a gentle warmth, will allwage the cold quality of the Clay, and make it bring forth more abundantly.

The mixture
of Clay.

Lastly, if the same spoiled earth be of a mixed quality, then you shall look whether it be binding or loosening. If it be binding, then you shall mix or cover it with fine fresh sand; if loosening, then with a reasonable rich and tough clay, for so you shall bring it to an open and comfortable temper, making

The mixture
of mixt earth.

it able both to receive, cherish, and bring forth the Seed; which before either too much wet, or too much driness did stifle and bind up within the clots and mould, so as it had no strength to bear it self through the same.

The second
plowing.

When you have covered your Lands with this mixture, you shall then plow it over again before Midsummer, turning the new laid earth unto the old earth, and as soon as that labour is finished, you shall then lade forth your manure or compost unto it, in which you are to have a great care what manure you elect for that purpose, for it is not the richest and fattest manure, as your Pigeons-dung, or Pullens-dung, Lime, Chalk, or Ashes, your Horse-dng, your shovelings upon High-ways, your beasts hoofs, your Horn shavings, your Hemp-weed, or any other Weed which groweth near the Sedge of the Sea, neither your Oxe, or Cow-dung, though of all before-named, that is the best, which doth the most good upon these spoiled grounds, because they have all in them a strong quality of saltness or sharpness, which will rather add than diminish the evil quality of the earth; but in stead of these, you shall take the mud of dried bottoms of Lakes, Ponds, and Ditches of fresh-water, and the moisture or wetter such mud or bottoms are, the better it is, or straw which is rotted by some fresh water-course, rain, or the like: by no means that which is rotted by the urine or stale of horse or cattle, for that is the saltest of all other; or you may take any Weeds which you see grow in fresh Rivers, Ditches, Ponds, or Lakes, especially those which grow at the bottoms of Willow, Sallow, or Osier-Trees; or you may take the old rags of woollen cloth, or any other manure which you know to be the woollest or freshest, and with any of these, or all those together, you shall very plentifully cover your ground all over; and immediately upon the covering or laying on, see you presently plow it, land after land; for to give it any long respite after it is spread, the Sun out of his attractive and strong natural will exhale and draw out all the vertue from your manure, and so spoil much of your labour.

Election of
Manures.

The best Ma-
nures.

The ordering
of the Manure

The third
plowing.

When you have thus manured it, and plowed it, you may then let it rest till *Michaelmas*, at which time you may plow it the last time, and then sowe it with the strongest and hardest
Wheat

Wheat you have, of which the white Pollard is the best, and there is no question but if it be safe from a second Inundation, your crop will be both plentiful and rich, and also acquit and pay largely for all your former charges. The second year you need but only plow it as aforesaid, and then sow it with good Hempseed, and be assured you will have a brave crop arise thereof; then the third year you shall plow it as flat as you can, still throwing it down, and not raising it up at all, and then sow it with the best Oats you can get, according to the nature and strength of your Country, and be sure to harrow it well, and to break every clot, and make the mould as fine as possible, and the next year after your Oats, lay it for grass, and I dare be bold, it will bear reasonable meadow; yet would I not have you this year to preserve it for that purpose, but rather to graze it with Sheep or Cattle, especially Sheep, of which I would have you lay on good store; for it matters not how near or close to the ground they eat it; for the next year it will become to the fulness of perfection, and be as profitable or more profitable ground than ever it was, and then you may apply or accommodate it for what use they please, either arable, Meadow, or for continual grazing.

The second year sowing; and third.

Laying the earth for grass.

And thus much touching the manner of reducing again, and bringing unto their first perfection, all sorts of grounds which have been over-flowed, or spoiled by Salt-water, or the Sea-breaches, whether it be arable or pasture; as also the enriching or bettering of the same. Of grazing.

C H A P. XIII.

Another way to enrich barren Pastures, or Meadows, without the help of water.

IF your barren Pastures or Meadows be so seated, that there is no possible means of washing or drowning them with water, you are then only to restore and strengthen them by the efficacy of Manure or Scyl, without any other help, and this may divers ways be done, as by those manner of manurings, which I have formerly treated of. But to go a better, and briefer way to work, and more for the ease and capacity of the plain Husbandman,

Clay manure.

bandman, whensoever you shall be posselt of these barren pastures, if the barrenness proceed from sand, or gravel, then some Husbands use to manure the pasture over with the best Clay they can get, first laying it on heaps, then spreading it, and lastly, with clotting beetles breaking it into as fine dust as they can get it, and this labour they commonly perform as soon as they can after Harvest, when the latter Spring is eaten, and the earth is most bare; but if the barrenness proceed from an hungry, cold, and

Moorish earth.

dry clay, then the manure is with the best moorish black earth which they can get, or with any moist manure whatsoever, especially, and above the rest, when the Soil that is digged out of old ditches, ponds, or dried up standing lakes, and this earth must be laid plentifully upon the ground in manure heaps, as aforesaid, that is to say; first in great heaps, then after broken and dispersed over the whole ground; and lastly, broken into small dust, and mixed with the swarth of the ground, and this labour, as the other generally performed after the Harvest, as a time of most convenience, and giving the earth a fit respite to suck in the strength and comfort of the new earth, and also having all the Winter after with his frosts, snows, and showers, to mellow, ripen, and mix together one earth with the other: and doubtless this is a most exceeding good Husbandry, and not to be refell'd or carpt against by any knowing or sound judgment; only it is not the most absolute, or best of all ways whatsoever, but that others may be found somewhat more near, and somewhat more commodious.

The best way
to enrich pa-
sture or mea-
dow.

Therefore, whensoever you shall be owner of any of these barren pastures, or meadows, of what nature or condition soever the earth be; whether proceeding from gravel, sand, clay, or pestered with any other malignant quality whatsoever, to reduce it to fertility and goodness in the shortest time, and to the most profit, about the Month of *March*, when all pasture grounds are at the barest, and do as it were remain at a stand between decreasing and increasing, you shall begin then to lead forth your manure for the retreshing of these Earths, and the manure which you shall carry unto these grounds, shall be the soil of streets within Cities or Towns, or the parings and gatherings up of the High-ways, much beaten with travel, also the earth for

The Soil of
the Streets or
High-ways.

for two or three foot deep, which lyeth under your dung-hill when the dung is removed, and carryed away, for this is most precious and rich mould, and is not alone excellent for this use, but also for the use of Gardens; for the strengthening and comforting of all sorts of tender plants, and for the use of Orchards, for the comforting both of old and young Trees, when at any time their Roots, are bared, or otherwise when there groweth any mislike or decreasing.

Earth under
Dung-hills.

To enrich
Gardens or
Orchards.

You shall also take the fine earth or mould which is found in the hollow of old Willow-trees, rising from the root up almost to the middle of the Tree, at least so far as the tree is hollow, for than this, there is no earth or mould finer or richer.

The mould
of Willow in
Trees.

Of all these manures, or of any one of them, or of as many as you can conveniently get, you shall lead forth so much as may very plentifully manure & cover your ground all over; you shall first lay it on the earth in reasonable big heaps, that the Sun may not exhale the goodness out of it, and then at your best leisure, & so soon as you can conveniently, you shall spread it Universally over the field, dispersing it as equally as you can, unless your field be more barren in one place than in another, which if it be, then you shall lay the greatest plenty where it is most barren, and the less where you find the greatest fertility; yet, by all means, see you scant not any place, but give every one his due; for to do otherwise would shew much ill husbandry.

Now it is the use of some Husbandmen, that what mould or earth is laid out from six a clock in the morning, till three of the clock in the afternoon, that they make their Hinds spread in the evening before they go to supper; and unquestionably it is a very good course, and worthy to be imitated of every good Husband.

After you have laid forth your mould, and spread it all over your pasture or meadow, then you shall make some boyes, girls, or other people, to pick and gather up all the stones, sticks, or other unnecessary matter which might happen to be led forth with the mould, and to pick and lay the pasture so clean as is possible; which done, it is to be intended, that yet notwithstanding this ground will lye exceeding rough, both in respect of the clots of earth, which will not easily be broken, as also in re-

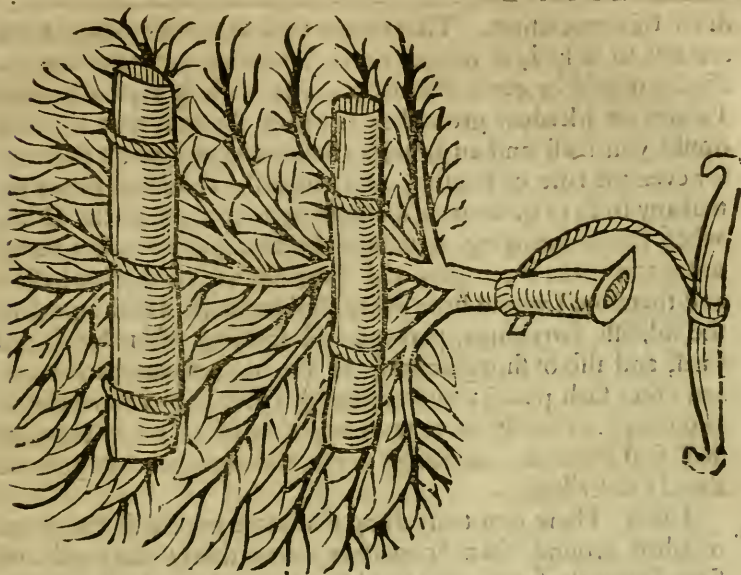
spect

spect of naturall roughness of these rich moulds, which at this time being digged up in the wet, will not easily be separated or dissolved, and therefore when you have finished the labours before said, you shall let the clots rest till the Sun and weather have dried them, then after a ground showr (observing to take the first that falleth) you shall harrow your ground over, after this manner.

*A new way of
Harrowing.*

You shall cut down a pretty big white Thorn-tree, which we call the Hawthorn-tree, and make sure that it be wonderfull thick bushie and rough grown; which done, you shall plash it as flat as you can, and spread it as broad as you can, and those branches or boughes which of necessity you must cut in sunder, you shall again plash and thrust into the body of the Tree, binding them with cords or withs so fast thereto, that they may by no means scatter or shake out, and if any place appear hollow or thin, and cannot come to lie hard, firm, and rough upon the ground, then you shall take other rough bushes and thrust into the hollow places, and bind them from stirring also, till you have made your plash full and equall in all places, and that all the roughness may be as in a flat levell equally touch the ground; when you have thus proportioned your Harrow, you shall then take great loggs of wood, or pieces of timber, and with ropes bind them on the upper side of this rough Harrow, that the poise or weight of them may keep the rough side hard, and firm to the earth, and then the Harrow will carry this proportion or figure.

To,



To the big end of this harrow, you shall fix a strong rope with a Swingle-tree with Treats, Coller, and Harness, and one Horse is fully sufficient to draw it round about the Pasture or Meadow: so with this Harrow you shall harrow the ground all over, and it will not onely break all the hard clots to a very fine dust, but also disperse them and drive them into the ground, and give such a comfort to the tender roots of the young grass, that newly springing, that it will double and treble the increase. And for mine own part, this experience I my self have seen upon an extream barren Pasture ground in *Middlesex*, where none of these good moulds or soyles could be got; but this Husbandman was fain to take all the rubbish and coorse earth even to the very sweepings of his yard, and for want of enough thereof, to take any ordinary earth he could get, and with it he dressed the ground in such sort as I have now last shewed you, and this being done in *April*, he had in *June* following as good Meadow as could be wisht for, and was the first Meadow I saw cut down in all that Country: from whence I

Of Rubbish
and sweepings.

draw this conclusion. That where these better moulds or soyls are not to be had, if yet notwithstanding you take any ordinary mould or earth whatsoever, and with it replenish your Pasture or Meadow ground as is before shewed, that without doubt you shall find an infinite commodity, and profit thereby; for even the rule of Reason, and generall experience shews us, that any fresh or quick mould coming to the root of the Grass, when it is in-springing, must needs be an infinite comfort thereunto, and make it prosper, and shoot up with a double haste; and therefore I would have every Husbandman to make much of the rubbish, sweepings, parings, and spitlings of his house and yard, and also of shovellings up of the high-ways, back-lanes, and other such places; and especially if they be any thing clayie, or moorish, or sandy mixt with any other soyl; for of them he shall find great use, according to the Husbandry and experience already described.

Of Soap-ashes.

Lastly, There is not any thing that more enricheth Pasture or meadow ground then Soap-ashes, being thinly scattered and spread over the same; and this labour would ever be done at the latter end of *April*, for then Grass is beginning to shoot up, and at that time finding a comfort, the encrease will multiply exceedingly.

CHAP. XIV.

How to enrich, and make the most barren soyl to bear excellent good Pasture or Meadow.

Two wayes to enrich earth.

TO speak then of the bettering and enriching of these barren earths, and reducing them to good Pasture or Meadow, it is to be understood, that there are but two certain wayes to compass and effect the same, namely, water or manure.

You are then, when you go about this profitable labour, to consider the situation of the earth you would convert to Pasture, and to elect for this purpose, the best of this worst earth you can find, and that which lyes lowest, or else that which is so descending, as that the bottom thereof may stretch to the lowest part of the continent, for the lower that such grounds lye, the sooner they are made good, and brought to profit: Next, you shall consider

sider what burthen of grasse it bears, and whether the grasse be clean and intire of it self (which is the best and likeliest soyl to be made fruitfull) or else mixt with other worser growths, as Thistle, Heath, Broom, or such like, and if it be burthened with any of these naughty weeds, you shall first destroy them by stubbing them up by the roots, and by burning the upper swarth of the earth with dry straw mixt with the Weeds which you shall cut from the same, then it shall be good for certain nights, both before the first and latter spring, to fold your sheep upon this ground, and that not in a scant manner, but very plentiful, so as the dung of them may cover over all the earth, and their feet trampling upon the ground, may not only beat in the dung, but also beat off all the swarth from the earth, that where the Fold goeth, there little or no grasse may be perceived, then whillett the ground is soft, and thus trampled, you shall sow it all over with Hay-seeds, and then with your flat board beetles, beat the ground smooth and plain, which done, you shall then strow, or thinly cover the ground with the rotten stradds of Hay-stacks, and the moyst bottoms of Hay-barns, and, over that, you shall spread other strong manure, of which, House-dung, or Horse-dung, and mans ordure mixt together is the best, or for want of such, either the manure of Oxen, Kine, or other beasts; and this manure also you shall spread very thin upon the ground, and so let it lye till the Grasse come up through the same, which Grasse you shall by no means graze or feed with your Cattell, but being come to the perfectness of growth, you shall mow it down; and although it will be the first year but short and very coorse, yet it skilleth not; for the ensuing years shall it yield profit, and bring forth both so good grasse, and such plenty thereof as reasonably you can require; for this is but the first making of your ground, and alteration of the nature thereof: neither shall you thus dress your ground every year, but once in twenty or 40 years, having plenty of water to relieve it. When therefore you have thus at first only prepared your ground by destroying the barren growth thereof, and by manuring, sowing, and dressing it, you shall then carefully search about the highest parts of the ground, and the highest parts of all other grounds, any way neighbouring round about

Of watering
Grounds.

about it, and somewhat above the level thereof, to see if you can find any Springs in the same (as doubtless you cannot chuse but do, except the ground be of more then strange nature ;) and the heads of all such springs as you shall find, you shall by gutters and channels draw into those ditches which shall compass your meadow round about, observing either to bring the water into that part of the meadow ditch which ever lyeth highest, and so let it have a currant passage through the ditches down to the lower part thereof, and so into some Lake, Brook, or other channell, and in this sort you may bring your water a mile or two : Nay, I have seen water brought for this purpose, three or four miles, and the gain thereof hath quit the charge in a very plentiful manner.

Helps in the
Watering.

But if you cannot find any Spring at all, nor can have the help of any Lake, Brook, River, or other channell of moving water, (which is a doubt too curious, as being cast beyond the Moon) you shall then not onely cast ditches about this your Meadow ground, but also about all other grounds, which shall lye about, and that in such sort, that they all may have no passage but into the upper part of the meadow ditch, so that what rain soever shall fall from the Skie upon those earths, it shall be received into those ditches, and by them conveyed into the meadow ditch : and to augment the store of this water, you shall also in sundry parts of those upper grounds which are above the meadow in places most convenient, dig large Ponds or Pits, which both of them selves may breed, and also receive all such water as shall fall neer about them, and those Ponds or Pits being filled (as in the winter time necessarily they must needs be at every glut of rain) you shall presently by small drains, made for that purpose, let the water out from them into the ditches, and so into the meadow ditch, and so stopping all the drains again, make the Ponds or Pits capable to receive more water.

When and
how to water.

When you have thus made your ground rich with water, and that you see it flow (as in the winter time necessarily it must) in plentiful manner through all your ditches, you shall then twice or thrice in the year, or oftner, as you shall then think meet in the most convenientest places of the meadow ditch,

stop

stop the same, and make the water to rise above his bounds, and to over-flow and cover your meadow ground all over, and if it be a flat level ground, if you let the water thus covering it to lye upon the same the space of four or five dayes, or a week, it shall not be amiss; and then you may water it the seldomer. But if it lye against the side of a hill, so that the water cannot rest upon the same, then you shall wash it all over, leaving no part unmoystened; and this you shall do the oftner, according as the water shall fall out, and your water grow more or lesse plentifull.

Now for the best season or time of the year for this watering of meadows, you shall understand, that from *Alhallowtide*, which is the beginning of *November* (and at which time all after-growth of meadows are fully eaten, and cattel for the most part are taken up into the house) untill the end of *April* (at the which time grass beginneth to spring and arise from the ground) you may water all your meadows at your pleasure without danger, if you have water enough at your pleasure, and may spend or spare at your will; yet to do in the best perfection, and whereby your ground may receive the greatest benefit; you shall understand, that the onely time for the watering of your meadows; is, immediately after any great Flux of rain, falling in the Winter, any time before *May*, when the water is most muddy, foul, and troubled, for then it carrieth with it a soyl or compost; which being left upon the ground, wonderfully enricheth it, and makes it fruitfull beyond expectation, as daily is seen in those hard Countries, where almost no grass grows but by this industry: And here you must observe, that as you thus water one ground, so you may water many, having ever respect to begin with the highest, and so let the water pass out of one ground into another, untill it come to the lowest, which commonly is ever the most flat and level, and there you may let the water remain so long as you think good (as was before shewed) and then let it out into other wast ditches or rivers. And here you shall know, that this lowest ground will ever be the most fruitfull, as well because it lyeth the warmest, moystest, and safest from storms and tempests, and also because what soyl or other goodnes this over-flow of water, or the rain washeth from other grounds, it

The best season for watering.

leaveth.

leaveth upon this, and so daily encrease the fertility, from whence you shall gather, that at the first making of these meadow grounds, you may bestow less cost of manure and other charges upon this lowest, flat, level ground, than on the higher: and so by that rule also, observe to bestow on the highest ground, and the highest part of the highest ground ever the greatest abundance of manure, and so as you shall descend lower and lower, to lay your manure thinner and thinner, yet not any part utterly unfurnished and void of compost; yet, as before I said, you are to remember, that these meadow grounds need not thus much use of manure (having this benefit of water, and the first years dressing as was shewed in the beginning of this Chapter) above once in twenty years; nay, it may be, not above once in a mans life time.

And here also is to be considered, that the water which cometh from Clay or Marl grounds, being thick, muddy, and puddy, is much better and richer than that which cometh from sand, gravel, or pibble, and so runneth clear and smooth, for that rather doth wash away and consume the goodness of the ground, than any way add strength thereunto.

CHAP. XV.

Of the enriching and dressing of Barren grounds, for the use of Hemp or Flax.

Grounds ill
for Hemp or
Flax.

YOU shall understand, that there are two sorts of grounds, which out of their own natures utterly refuse to bear Hemp or Flax; that is, the rich stiff black Clay, of tough solid and fast mould, whose extreame fertility and fatness giveth such a surcharge to the increase of the seed, that either with the rankness it runneth all into Bun and no rind; or else the seed being tender, and the mould sad and heavy, it burieth it so deep therein, that it can by no means get out of the same: The other is the most vile and extreme barren ground, which by reason of the climate wherein it lyes, is so exceeding sterile and unfruitfull, that it will neither bear these seeds, nor any other good seed. And of these two soyls only I purpose in this place to treat; for which, such soyls as will naturally & commodiously bear these seeds, I have nothing to do, in that I have sufficiently

ficiently written of them in mine *English Husbandman*, and *English Housewife*; which are books onely for good grounds, but this for all such grounds as are utterly held without cure.

To begin then with the stiff black Clay, which albeit it be very rich for Corn, is most poor for these seeds, when you would reduce and bring it to bear Hemp or Flax, which neer unto the Sea-coast is of greater price and commodity than Corn any way can be, especially adjoyning unto any place of fishing, in respect of Nets and other Engines which is to be made of the same, and which being daily wasted and consumed, must likewise be daily replenished; you must first with a strong plough, fit for the nature of such land, plow up so much ground as you intend to sow Hemp or Flax upon, about the midst of May, if the weather be seasonable, and the ground not too hard: if otherwise, you must stay till a shower do fall, and that the earth be moistned, then shall you hack it and break the clots in small pieces; then with the salt Sea-sand, you shall sand it very plentifully; but if that be not to be gotten, and that you be very well assured of the natural richness of the earth, you shall then sand it with the best Red sand you can get or find neer unto you, and upon every Acre of ground you thus sand with fresh sand, you shall sow three bushels of Bay-salt, and then plow up again the earth, sand and salt together, which would be done about the latter end of the year, as after *Michaelmas*, and so let the ground rest till seed-time, at which time you shall first before you plough it, go down to the low rocks on which the Sea beats, and from thence with drags and other Engines, gather those broad leaved black weeds, which are called Orewood, and grow in great tufts, and abundance about the shore; and these weeds you shall bring to your Hemp-land, and cover it all over with the same, and then you shall plow it again, burying the weeds within the earth.

And herein is to be observed, that in any wise you must lay these weeds as wet upon the Land as when you bring them out of the Sea; provided still, that you add no other wet unto them but the salt-water, for so they are of all soyls and manures whatsoever the onely best and fruitfullest, and most especial for these seeds, and breed an increase beyond expectation.

K

When

Black Clay for
Hemp, &c.

When you have thus plowed over the ground, you shall then hack it again, and then sow it with either Hemp or Flaxseed, which you please, and after it is sown, you shall then harrow it (and not before) and you shall be carefull to harrow it into as fine mould as you can, and this mould is likely to run fine enough, as well by reason of the fertility, as also of the mixture; yet what clogs you cannot break with your Harrows, those you shall break with your clotting-beetle, and such like tools; then after the first great showr which shall fall after your sowing, you shall run over your land thus sown with your back Harrows, that is, with a pair of large Harrows, the wrong side turned upward, to wit, the teeth turned from the earth, and the back towards the earth; and if need be, you shall lay upon the Harrows some indifferent heavy piece of wood, which may keep the back of the Harrows closer to the ground, and so go over all the earth, and lay it as smooth and light as is possible, without leaving the smallest clot that may be unbroken; Now if the ground be sown with Hemp, you shall not think of weeding it at all, because Hemp is so swift a grower, and such a poyson unto all weeds, that it over-runneeth, choaketh, and destroyeth them; but if it be sown with Flax or Line, which is a much tenderer seed, and bringeth forth more tender leaves and branches, then you shall watch what weeds you see spring up, and in their first growth pluck them up and cast them away, till you behold your Flax or Line to be grown above the weeds, and then you may let it alone also, for after it hath once gotten height, it will not be over-grown with weeds.

Making of ill
earth bear,
&c.

Now touching the other soyl, which through the extreame barrenness thereof, refusing to bring forth any good fruit at all, you shall in all points dress it, as you dress your plain clayes, described in the second Chapter of this Book, beginning at the same time of the year that is then appointed, or (if more necessary occasions hold you) if you begin later, it shall not be amiss, and then at *Michaelmas* you shall plow it over the second time, and manure it with sea-weeds, and so let it lye at rest till *March* (which is seed time) and then plow it again, and manure it with sea-weeds again, and after the plowing, you shall

hack

hack it, and if in the hacking you find the earth stiff and tough then you shall harrow it before you sow it, and harrow it again, breaking the earth so small, and laying it so smooth as possible you can, using the help both of the clotting beetles, and all other tools which may be available for breaking the earth and making the mould as fine as any ashes; then after the first great showr of rain, perceiving the ground to be well moistened, you shall instead of the back Harrows (which upon this earth may be too light) take the great rowler which is described in the book of the *English Husbandman*, being a great round piece of timber of many squares, drawn either by Horse or Oxen, but a single Horse is best, both in respect of much treading the ground, as also for the swift going away or drawing of the same: for the swifter it is drawn, the better it breaketh the ground, and the lighter it leaveth the mould: and with this rouser, you shall run over and smooth your ground very well, leaving no clot unbroken, and so let it rest.

As for the weeding of this ground, you shall not respect it at all, for naturally it will put up no weed, the very ground of it self being a very great enemy thereunto, nor shall you need to dress this ground in the form before said, but once in eight or ten years: only every seed time, when you plow it (as you shall not need to plow it at any time, but seed time only) you shall before the plowing, cover or manure the Land with the sea-weed before spoken of, which will give strength enough to the ground, without any other assistance.

Weeding.

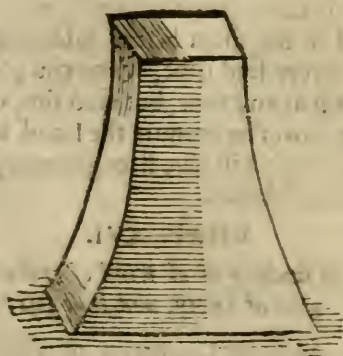
CHAP. XVI.

The manner of stacking of all Kind of grain or pulse with greatest safety, and least loss.

IN these barren and hard Countries, of which I have formerly written, all sorts of buildings are exceeding costly and scarce, both in respect of the climate, which is commonly most extreme cold, mountainous, and much subject to storm and tempest, as also through the great want of Wood and Timber, which in those hard soyls doth hardly or never prosper, and therefore in such places buildings must be both small and dear, so that it will be very hard for the Husbandman to have house-room for

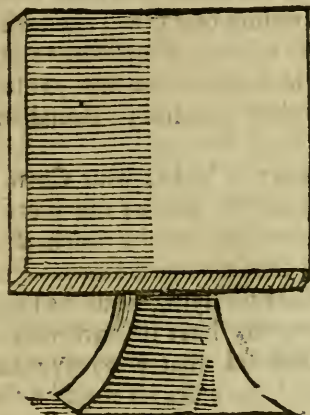
all his corn ; but that of necessity he must be enforced to stack much, or the most part of his Corn without doores, which albeit it be a thing very usuall in this Kingdome, yet is it in many places so insufficiently done, that the loss which redounds thereby (partly by the moysture of the ground, which commonly doth rot and spoyle at least a yard thickness of the bottom of the Stack next the ground, and partly through Mice, Rats, and other Vermine, which breeding in the Stack, do eat and devour a great part thereof, as also through many such like negligent causes) is greater than a Husband may with his credit be guilty of, or a profitable Husband will by any means suffer to be lost so negligent.

To shew then the manner how to stack or mow your Corn without doores, in such sort, as neither the ground shall rot it, nor these vermines destroy it, nor any other loss come to it by way of ill Husbandry, you shall first cause four pieces of timber, or four stones, to be hewed broad and round at the neither ends, like the fashion of a Sugar-loaf, or this figure.

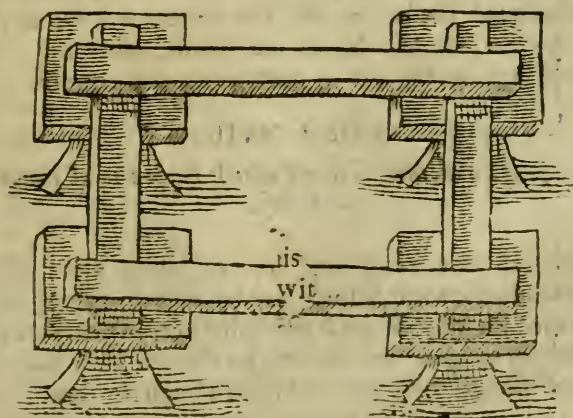


And these pieces of wood or stone shall be in length three-foot or thereabout, and in compass or breadth at the bottom, two foot, or a foot and a half, and at the top not above one foot : these four pieces of wood or stone you shall place in your stack-yard, or other convenient place neer your thrashing-floor,

floor, and you shall place them four square, of an equal distance one from another : then you shall cut out four smooth boards of two inches and a half thick at the least, and full three foot square every way , and these boards you shall lay upon the heads or narrow tops of these stones or pieces or timber according to this Figure.



Then shall you take strong over layes of wood, and lay them four square from one board to another, according to this Figure.



And then upon these over-layers you shall lay other smaller poles close one by another, and then upon them you shall mow or stack your Corn, whether it be Wheat, Barley, Oats, Pease, or any other kind of grain, and be sure if you make your stack handsome and upright, which consisteth in the Art and Workmanship of the Workman, you shall never receive loss in your Corn: for the raising of it thus two or three foot from the ground, will preserve it from all moisture or hurt thereof, and the broad boards which cover the four ground-posts will not suffer any Mice or other vermine to ascend or come into the same.

Now for the manner of laying your Corn into the Stack, you shall be sure to turn the part of the sheaf where the eares of the Corn lye ever inward into the Stack, and the other which is the straw end, you shall ever turn outward, and by that means you shall be assured that no flying Fowl, as Pigeons, Crows, and such like, can do you any hurt or annoyance upon the same: Lastly, you shall understand, that you may make these Stacks either round, square, or long-wise, yet round is the safest, and if you do make them longwise, then you shall set them upon six ground-posts, or eight, according to the length and proportion you would have it, and after your Stack is made, you shall then thatch it very well to keep out the wet; also if when you do Stack your Wheat, you do top your Stack with Oats or other course grain, it will be so much the better, and the Wheat will lye in greater safety: for no part of a Stack well made, especially a round Stack, will so soon take wet or hurt, as the top thereof.

CHAP. XVII.

The diseases and imperfections which happen to all manner of Grain.

ALbeit the manner of Stacking and laying up of Corn or Grain in the form before shewed, may to every one give an assurance for the safe and profitable keeping thereof as long as it endureth therein, and abideth in the eare, yet because divers necessities may compell the Husbandman to thrash out his Corn, as either, for present use of Straw, Chaff, Garbage, or other

other commodities needfull unto him (as the season of the year shall fall out) I think it most necessary in this place, to shew how all manner of Grain and Pulse, of what nature soever, may most safely and profitably be kept from all manner of annoyances, or corruptions whatsoever, being a work of that utility and goodness, that not any belonging to the Husbandman doth exceed it : Nor shall it be sufficient to shew the offences and diseases of Grain with their cures and healthful preservations; whilst it is in the Husbandmans possession, but also whilst it is in the earth, and at the mercy of cold, heat, moistness, or dryness, and not onely subject to the malignant influences of Stars and Planets, with the encreating and decreasing of the Moon and her operations : but also of divers other hurtfull Vermin; as birds, worms, pismires, dorrs, snails, moals, and other such like : some whereof consume and devour the grain ere it sprout, other sprouting when the kernel is rotten, and turned to sweet substance, and others after it is sprouted, by devouring the first tender leaves, before they have any strength to appear above earth, being as it were but soft white threads not changed into the strength of green, because the air and Sun hath not yet lookt upon it.

To begin then with the first enemies of corn or grain, after it is thrown into the earth, there is none more noysome then *Crows*, and *Choughes*; and other smaller birds, which flocking after the seeds-man will in a manner devour and gather up the grain as fast as it is sown : for as according to the old saying, *That many birds make light work*, so many of their mouths (being creatures that ever flye in flocks together) and their much nimbleness in devouring, soon rob the earth of her store, and deprive the labouring Husbandman of very much profit; and the Grain which the creatures do most consume, is all manner of white Corn, as Wheat of all kinds, Rye and Oats, as also Hemp-seed, Lin-seed, Rape-seed, and such like : Neither are they only offensive during this time of sowing, but after it is sown and covered, digging it with their strong bills out of the earth, and so making the waste greater and greater.

Crows,
Pidgeons, and
Birds.

The prevention or cure of this evill, is divers, as the affections of people, and custom of Countries do instruct them : for
some

The Cure.

some (especially the *French-men*) use when they sow these grains and seeds, first to sprinkle it with the dregs or lees of their bitterest oyles, which when these devouring fowls do taste, they refuse to do any further hurt: Others use to sow Pigeons dung or Lime with their seed, which sticking unto the grain, the unfavorinefs thereof will make the fowl cast up the grain again, and leave to do further hurt. But forasmuch as these medicines cannot ever be had, nor are ever wholesome for every ground, the onely best and safest means to prevent this evil, is, to have ever some young boy, with bow and arrows to follow the seed-man and Harrows, making a great noise and acclamation, and shooting his Arrows where he shall see these devourers light, not ceasing, but chasing them from the Land, and not suffering them at any time to light upon the same, and these servants are called Field-keepers, or Crow-keepers, being of no less use and profit (for the time) then any other servants whatsoever. Nor is it sufficient to have the Field-keepers for the bare time of seed only, whilst the grain is in sowing, but he shall also maintain them untill such time as you see the grain appear above the earth, which for Wheat or Rye, because they are winter seeds, and so longer in sprouting, will ask a full month; for all other seeds which are sown in the Spring, or Summer, a fortnight is full sufficient: And this Field keeper shall not fail to be in the field an hour before Sun in the morning, and so continue till half an hour, after Sun-set in the evening, for at the rising and setting of the Sun is ever done the greatest mischief, for then are all creatures most eager and hungry; and though the indurance may promise much pain and trouble, yet questionless the labour to any free spirit, is both easie, and pleasant.

Additions.

Also if your Field-keeper, instead of his bow and arrows, do use to shoot off a musket, or Harquebush, the report thereof will appear more terrible to these enemies of Corn, and the profit thereof will be a great deal more: for a shot or two of powder will save more Corn, than a weeks whooping and shouting, onely you must observe, that your Field-keeper use no bullet or hail-shot, for so he may turn scaring to killing. Now touching the destruction which these creatures make of Corn after it

is stackt up by tearing off the thatch, and digging holes and pits therein ; to prevent that, you shall cause the thatcher to scatter upon the thatch, great store of ashes of any kind, or else Lime, that as the Pidgeons or Crows tear up the straw, the Lime or ashes will sparkle into their eyes and nares, which they will not indure ; as for those parts of the stack which cannot be thatcht, as the sides and ends ; upon them you shall prick divers scare-crows, as dead Crows, or dead Pidgeons, or any other rags, as the shape of a man, made either of thumb-ropes of hay or straw, or else some old cast-away apparel, stopt with straw, & so fixed on the stack, also in this case you may use Clap-mills, or such-like toys, which make a great noise. But to conclude, the best prevention for these Creatures (if you want ability to maintain a field-keeper) is to take long lines of pack-thread, and in them to knit divers feathers of divers colours, especially white ones, and with little stakes so fasten them over the Corn, that with every breath of wind the feathers may dance and turn about, and the nearer that these blinks or scares come to the ground (when the Corn is new sown) so much the better it is, least the fowl finding a way to creep under them, begin not to respect them ; so that a hand or two from the ground is sufficient ; Provided that the feathers and scares have liberty to play and move.

But if it be to save Corn in ripening, that is to say, a little before it be reapt, when the ears begin to harden, or when it lieth in single sheaf upon the Land, for then fowl and birds do as great mischief, as at any other season, it shall then be fit that you raise these lines or scares upon higher stakes, so as they may play as much above the ears of Corn, as before they did above the earth ; and amongst these scares thus made upon lines in sundry parts of the field, you shall upon other stakes place many other bigger scares, as dead Crows, Pies, Gleads, Pigeons, or such like, as also the proportion of a man formerly shewed you, or any rags of cloath being black, fowl, and ugly, like Bakers malikins ; and than this, there is no safer way for the defence of Grain or Corn from these Birds, and such like.

The next great devourers or consumers of grain are Pismires OF Pismires. or Ants, which although it be but a little Creature, yet it is so laboursome, that the grain which they carry away or destroy by eating amounteth to a great quantity, and the mischief which

these little vermine do, after the Corn is covered in the ground, and before it sprout, for they creeping in at the little chinks of the earth; and finding the Corn, either drag it out, or eat it, so that it cannot grow, and the grain which they most hurt, is all manner of white Corn, especially your finest and smallest Wheat, for the skin or hull is thinnest, and the kernel whitest and sweetest: also to barley they do much hurt, especially that which is fullest and best; likewise to Rye, Hemp-seed, Lin-seed, and Rape-seed; as for Oats, because it is double hull'd, and also your great whole straw wheat, and polard wheat, which is thick hull'd, their hurt is not so much to them, and unto pulse nothing at all, because they are too heavy, too thick skinned, and bitter in taste.

The Cure.

The best cure and prevention for these Pismires, is, to search your Corn-fields well, especially under hedges and old trees, and on the top of Mole-hills, and if you find any beds or hills of Ants or Pismires, presently after Sun-setting, with hot scalding water to drown the beds or hills, or with wet straw and fire, to make such a smoak upon them, as may smother them to death: also if you manure your Corn-lands with ashes, lime, or salt-land, you shall be well assured it will never breed Pismires.

Of Dores.

Next unto these, your Dores or great black Clocks are vehement destroyers of all kind of Corn, both white Corn and Pulse, whilst it lieth dry on the earth, and before it sprout; for after it beginneth to sprout, they do no more touch it, and these Dores destroy it in the same manner, as the Pismires do, by creeping in at the small crevices of the earth, and finding the grain, do as long as it is dry, feed thereon; and though they are no hoarders, or gatherers together of the grain, keeping it in heaps in dry places, as the Pismires and other vermine do, yet they are great feeders thereon, and that continually: besides, they will ever chuse out the fullest and best Corn, and leave the leaner, whereby they do the Husbandman double injury, as first to devour, and then to devour but the best only.

The Cure.

The cure or prevention for these Dores, or black Clocks, is in Seed-time to make great smoaks in your Corn-fields, which will presently chase them from thence, for they are the greatest enemies that may be to all manner of smoak; but if that be not sufficient,

sufficient, then immediately before you sowe your Corn, you shall very lightly sowe your Land with sharp Lime, and whensoever the Dore shall find the smell, or taste thereof, presently he will depart; or if he eateth of the grain that toucheth the Lime, it is a present Poyson unto him, and there he dieth.

After these, your field Rats and Mice are very vehement destroyers of all manner of grain or Seeds before they sprout, especially all sorts of wheat, and all sorts of pulse, because for the most part those kind of grains in many Soyls are sown under furrows, and not harrowed, so that the furrows at first lying a little hollow, these Vermines getting in between the earth and them, will not only devour and eat a great part of the grain, but also gather together great heaps thereof into their nest, as is often seen when at any time their nests are found, some having more, some less, according to their labours.

And albeit in other Soils where the grain is sown above furrow, and so harrowed in, and laid much more close and safe, they cannot do so much hurt as in the former, yet even with these they will with their feet dig out the Corn in great abundance, and though in less measure, yet do hurt that is unsufferable; so that to conclude, neither Rye, Barley, Oats, nor any other smaller and more tender Seeds, are free from their annoyance and destruction.

Now the Cure and prevention for these Field Rats, or Mice, are divers, according to the opinions of divers Authors, and divers of our best experienced Husbandmen: for some use in the Dog-days, or Canicular days, when the Fields are commonly bare, to search out the holes and nests of these Rats and Mice, which are easily known, being little round holes in the earth, made so round and artificially as if they were made with an Auger, no bigger than the body of the Creature that was to lie in it, and into these holes they use to put a few *Hemlock-seeds*, of which when the beasts tastes it is present death unto them: Others use to sprinkle upon the land *Hellebor*, or neeling powder mixt with Barley-meal, of which the Mice and Rats will greedily feed, and it is a deadly bane and present death unto them.

Lastly (& which is the best Medicine) if you take a good quantity of ordinary green glass, beaten also to powder, and as much

Copperas or Vitriol beaten also to powder, and mix them with course honey, till it come to a paste, and then lay it in the holes, and most suspicious places, and it will neither leave Rat nor Mouſe about all your fields, but suddenly destroy them.

Of Worms.

The next great destroyers of Corn and Grain, are Worms, and they destroy it in the sprouting, then when the ground hath rotted it, and the white or milk substance breaking open the upper husk, shooteth forth in little white threds at both ends, upon which whilst it is so moist and tender, the worm feedeth extreme, and so devouring up the substance or sperm, is the cause the corn cannot grow or get out of the ground, and these worms being as it were the main citizens within the earth, are so innumerable, that the loss which is bred by them is infinite.

The Cure.

Now the cure or prevention for these Worms, is diversly taken; for some Husbandmen use but only to strike into the Plow-Rest, and under the lowest edge of the shebord certain crooked spikes of Iron of great nails half driven in, and turned back again, with which as the Plow runs tearing in the ground, and turns up the furrow, those pieces of Iron kill and tear in pieces such Worms as are either within or under the furrow that the Plow casts up, and this is sure a very good Husbandry Practice, but not sufficient for the destroying of such a secret hurtful vermine which is so innumerable, and lieth so much concealed; therefore more curious Husbands use besides this help of the Plow, to take Oxe-dung and mix it with straw, and then to burn it up in the land making a great smoke over all the land, immediately before you plow it for Seed, and it is thought that this will kill all the worms which lie so high in the earth, as to hurt the Corn.

Others use before they make either the mixture or the smoke, to wet the straw in strong lye, and then adding it to the dung, the smoke will be so much the stronger, and the Worms kill'd the sooner; or if you sprinkle strong Lye upon your Seed, before you sow it, there is not any Worm that will touch the grain after: Also if you take hemp and boil it in water, and with the water sprinkle your seed before you sow it, not any Worm will come near to touch it.

Of Rye not to
be wet.

Yet it is to be observed in this rule of wetting your seed, corn, that

that by no means you must wet your Seed-Rye, for it is a Grain so warm and tender, that it will neither indure cold, wet, nor stiff ground, insomuch that the Plow-man hath a Proverb, that Rye well drown'd in the Hopper; that is to say, it must neither be sown on wet ground, nor in a wet day, since present showers are apt to destroy.

Lastly, it is thought that oft plowing your ground in the wane of the Moon is a very good means to destroy both.

Touching that practice which many use, to gather the worms from their lands at Sun-rise, in bright dewy morning, and Sun-set; when the worms couple above the earth, I hold it more fit for small Gardens, than large Corn-fields.

The next great destroyers of Corn, are Snails; and they destroy it after it is sprouted, feeding upon the tender white threds and frons which start from the Seed and would rise above the earth, being the stem or stalk on which the ears should grow (were it not devoured and eaten up by the Snails, and such like Vermine) as soon as it begins to peep up, or as it were to open the earth; whereby it is driven back and forced to die in the earth: for these creatures sucking up the tender sweetness, deprive it both of life and nourishment.

The Cure and prevention for this evil, is to take the soot of a Chimney, and after your Corn hath been sown a week or ten days, or within two or three days after the first shower of Rain which shall fall after the Corn is sown; you shall sow this soot of the Chimney thinly over the Land, and not a Snail will indure to come thereon: Others use (especially in France and those more fertile Countries) to take common Oyl-lees, and after the Corn hath been sown, and is ready to appear above the ground, to sprinkle it all over the Lands, by which means no Snail or such like Creature will indure to come near the same.

The next great destroyer of Corn is accounted the Grasshopper, and he also destroyeth it after it is sprouted, and appeareth above ground as the Snail doth, but somewhat more greedily; for he not only feedeth on the tender white strings, but upon the first green leaves that appear also; by which means the Corn is not able to spring or bring forth a stem or stalk to bear the

the ear upon, or if it do put forth any, yet it is so small, weak and wretched, that the ear growing on the same, is withered and lean, and the grain dry and blasted, and no better than chaff; nor is there any Corn that escapeth the destruction of the Grasshopper, he generally feedeth on all: first on Wheat and Rye, because they are the earliest, then on Barly and Oats, and lastly on pulse, upon whose leaf and blossom he feedeth, whilst the first is sweet and pleasant, or the other green.

The Cure.

Now the Cure or prevention for these Creatures, is, according to the opinion of some Husbandmen, to take Worm-wood, and boyl it well in water, till the strength of the Worm-wood be gone thereinto, and then wet with that water in the month of May, to sprinkle all your Corn over when the Sun is rising or setting, and not any Grasshopper will come near, or annoy the same. Others use instead of Worm-wood to boil Centaury, and to use the water thereof in the same manner as aforesaid, and find an equal profit in the same: but it is most certain that any bitter concoction whatsoever, used and applied as aforesaid, will not leave any Grasshopper about your field; for any bitterness is such an enemy unto them, that they cannot live where they feel any taste thereof.

Of Moles.

The last offence of living Creatures belonging to Corn or Grain are Moles, which not only feed upon it after it is sprouted, and spindled, by eating up the roots thereof, and so consequently by killing the whole Corn; but also their digging and undermining of the earth, do root up the Corn and destroy it in most wonderful manner, for where they make their haunts, or are suffered to dig, there they will destroy almost half an acre in a day: neither make they choice either of grounds or grain, for all grounds and grains are alike, if the ground be not too wet or subject to Inundations, or over-flows (as for the most part Corn grounds are not) for above all things Moles cannot indure wet ground, or earth of too moist a quality.

The Cure.

Now the best Cure or prevention against these Creatures, is, to find out the trenches and passages, which are most plain & easie to be known by the turning up of the new earth, and digging cross holes in the same, to watch either the going forth, or the coming back of the Mole, and when you see her cast, to strike her

her with an iron fork made of many grains, as eight or fix at the least, and so to kill and destroy them, which is so generally known amongst Husbandmen, that it is become a trade and occupation among them, so that it needs no farther description; and the rather, in as much as for three or four pence a score, you may have any ground cleansed of Moles whatsoever.

Now there be some others which have not this art of killing or catching of Moles, which only do take brimstone and wet stinking straw, or any thing else that will make a stinking smoak, and putting fire thereto, smoak all the places of their haunts, and by that means drive them all clean away from the corn lands: many other practises they have, but none so good, certain, and probable as these already declared.

Thus far I have spoken of those offences which proceed from living Creatures, I will not treat of those which come and grow from the influence of the Heavens, being malignant vapours, which striking into the earth, do alter the sweet and pleasant nourishment thereof, and change it into bitterness and rottenness, whereby the Corn is either slain out-right, withered and made lean and unkindly, or else the kernel turns to a filthy blackness, being bitter, dry and dusty, like unto smoak, which the Husbandmen call smuttinefs, or mildew. It cometh also another way, as namely, by over-rankness, or too much fatness of the earth, and this hapneth most commonly only to Wheat; for if blackness happen to any other grain, it cometh of blafings, or other malice of the Stars, for rankness of the ground is in Barley, Rye, or Oats only, make them lie flat to the ground, the stalk not being able to support the multiplicity of the ears, and so by that means the grain wanting his true nourishment, grows withered, and of no validity; now that this is most easie to be found out, the rankness of the growing Corn rising as it were in close bundles together, and the deep blackness of the green blade will with small travel shew you.

This to cure and prevent; it shall be good before you sowe your grain, to sowe your land lightly over with Chalk, for that will abate his over-rankness.

There be other malignant qualities which proceed from the influences of the Heavens, or rather from the qualities of the Planets.

Offences from
the influence
of the Heaven.

Of Smuttinefs
and Mildew.

The Cure.

Additions.

Planets or Elements, which do many dangroushurts unto Corn, as namely the Hail, the Lightning, the Thunder, or the Planet-struck, or Blasting, for all which the antient Husbandmen have suggested several Cures : as namely for the Hail, to plant the White-vine, or stick the branches thereof in the Corn-field: for the Lightning, to close a Hedge-Toad in an earthen Pot, and burying her in the Corn-field, or to plant or hang up the feathers of an Eagle, or a Seal-skin, or to set Lawrel therein; for the Thunder, to Ring Bells, to shoot off great Ordnance, or to burn stinking weeds in the Corn-field : And for Blasting, to take the fair horn of an Oxe, and mixing it with dung, to burn it in the Corn-field, or to take the Branches of the Bay-tree, and to plant them in the Corn-field : But, in as much as all these, and many other the like, smell rather of Conjuraton, Charm, or Exorcism, then of any probability of truth ; I will neither here stand much upon them, nor perswade any man to give further credit unto them, than as to the vapours of mens brains, which do produce much, many times out of meer imagination ; and so I will proceed unto those things which are of far greater likelihood.

Of Frosts.

The next evil which hapneth unto Corn or Grain, is that which cometh by frost and sharp-nipping colds, which starving the Root, and binding up all nourishment, maketh the Corn dry, wither, and never prosper ; and, than the violence of the frosts, there is nothing more bitter to Plants and Seeds ; for, even Rasor-like, it cutteth the veins and sinews in pieces, and as sharp needles pricketh the heart of every growing thing : For as the fire which is most hot, when it rageth, burneth, and consumeth all things ; so the frost, which is most cold when it continueth, starveth and choaketh, or stiflcth whatsoever it embraceth.

The Cure.

Now the Cure or prevention for those evils which do happen to grain by these great frosts, is as some Husbandmen suppose, to cover the Land over when it is sown with ashes; others spread straw or rotten litter upon their Corn, and not any of them but is sufficient to prevent the worst injury that frost can do.

Mists and Fogs.

The most malignant quality which offendeth grain, is mist and

and fog; which being naughty vapours drawn from the infected parts of the earth, and fall upon the Corn, do not only make the grain leprous, but also infecting the better earth after the kindly nourishment thereof, and as it were distilling corruption in the veins, makes all that depends thereupon most leprous and unwholsom, and thereupon altereth the quality, quite turning sweetness into bitterness, fulness into emptiness, and goodness into badness, to the great loss of the Husbandmen, and the much disreputation of the ground.

Now the Cure and prevention of this evil, according to the The Cure. opinion of all the best Husbandmen, is, to take weeds green, the twigs of bramble, and other brush woods, wet straw, or such like stuff, and binding them up in great bundles, to put fire thereto, making a great and violent smoke, and then taking the advantage of the wind, to walk up and down the field and smoke it, which is thought a certain remedy to take away those inconveniencies which happen by the venome and poyson of these mists and fogs.

Now to conclude, of the diseases and infirmities which happen Corn reapt wet. to Corn whilst it is in the field, there is not any formerly spoken of more dangerous, or of vilder quality than the reaping, mowing, or gathering in of Corn wet, or too green, and unhardned; for such moisture, when the Corn is sheaved up close together, or stackt or mowed up, forthwith gathereth heat, and either setteth the Corn on fire, or else the moisture being of less quantity, and not apt to flame, yet it corrupteth the grain and straw, and breedeth a stinking mouldiness or rottenness about it: so that the Grain either becomes dung or dirt, or at least so stinking and unsavory, that it is good for no use or purpose, as is daily seen where careless Husbands gather in their Grain without respect or Government, making the old Proverb, *That haste ever brings waste.*

The Cure and prevention of this evil, is the well-husbanding The Cure. and managing of the Harvest, as first with a careful and well-judging eye to look upon your Corn, and to know by the hanging downward of the ear, looking as it were back to the ground, and by the hardness of the Grain, whether it be ripe or no; then looking to the cleanness of the Corn, as whether it

be full of greenness, as grass, weeds, and such like : or clean of itself without any mixture : if you find there be any weeds mixt with it, then you may reap it so much the sooner, though the kernel be not so well hardned as you would wish : and above all things, have a care never to shear Corn in the rain or wet, no, not so much as with the mornings or evenings dew upon it, but even in the heat and brightness of the day. Then having reapt your Corn so full of grass and weeds, you shall by no means shear it, but spreading it thin in the Sun, let the grass wither all that day, which when you perceive to change colour and grow dry, then bind it up in sheaves, and let it lie single a day, that the wind and Sun may get into it, and dry the greens more sufficiently ; then lay it in shocks of six or eight sheaves apiece, and in those shocks, turn the ears so inward, that the other bigger ends may defend them from all the rain, wet or dew that may fall upon them : then a day or two after, lay them in shocks of twenty, or four and twenty sheaves apiece, and in those shocks, let them take a sweat : then break them open in a bright Sun-shine day, and letting the air pass thorow them, to dry them, forthwith lead the grain home, and house it or stack it in such sort as was shewed in the former Chapter, and be sure the grain thus ordered and dried can never take hurt : but if the season of the year fall out so extraordinary evil and full of wet, that by no means you can get your Corn dry home, (which although it be seldome seen, yet it is possible to be seen) in this case you must bring it home as well as you can, and having your Kilne well ordered and bedded, you shall lay as many sheaves thereon, as it can contain, and turning and tossing them over a very gentle fire, by slow degrees, dry them very perfectly as near as you can, with no greater a heat than that which the Sun giveth, and then mow and stack them up at your pleasure, for the air will sweeten them again, and take away all smell or smoke or other annoyance ; only observe, not to stack them up whilst the fire or heat is in them, but when they are cold, and so they will be as sweet as may be.

washt Corn, or the washing of Corn : True it is (as before I have written) that all sorts of Wheat whatsoever are subject either by the rankness of the ground, blasting or else mildewing, to a kind of filthy footy blackness, as is already shewed ; and this footy Corn is taken two ways, generally and particularly : generally, if the whole Land be stricken, and no Corn saved, but all spoiled, which is called mildewed ; or particularly, where but some certain ears are struck, or some certain part of the grain, as when it is black at both ends, yet full and sound in the midst, and this is called smutcht Corn, being disfigured in part, but not in all. This smutcht Corn, which is stricken here and there, if the blasted ears be not culled out from the other, which to do is an Husbandry exceeding good and very worthy) when it cometh under the flayl, the dust of those black blasted ears will so foul all the rest of the Corn, that it will look black and ill-favoured, and so become unserviceable and unmarketable; for the blasted Corn is both bitter and unwholsome : In this case, you must of force wash this Corn, and you must do it in two or three waters, till you see all the blackness quite gone; which done, then drain away your water clean, and laying the Corn on fair window cloaths, or coverlids, lay it in the heat of the Sun, and so dry it again till it be so hard that it will grind : But if the time of the year will not serve for the Suns drying it, then you shall dry it on a Kiln, with a very soft and gentle fire, and then cool it in the air to recover the sweetness again, and then the Corn is as serviceable as any other : only for Seed it will by no means serve, both by means of the blasting, which makes the kernel imperfect at both ends where it should sprout, as also the too much drying thereof, by which it is so much hardened, that the ground hath no strength to resolve it; therefore it is the Office of every Husbandman when he chuseth his Seed-Corn, to eschew by all means this washt Corn as a Grain that is lost in the earth, and will by no means grow.

Therefore that you may know washt Corn from all other Corn, and so not to be cozened by any deceit in the ill Husbandman, you shall take it up in your hand, and if the Corn

To know
washt Corn.

look bright, clear, and shining, being all of one intire colour, without change or difference, then be sure the Corn is unwasht and perfect.

But if you find it look whiter at the ends than in any other part of the Corn, and that the whiteness is black and not shining, so that there is a changeable colour in the Corn, then be assured that the Corn is washt, and then by no means apt for Seed or increase.

Again, put three or four grains into your mouth, and chew them, and then if the taste be sweet and pleasant, and grind mellow and gently between your teeth, then is the Corn not washt; but if it have a bitterish, or fleshy raw taste, and grind hard between your teeth with much roughness, then hath the Corn been washt, and dried again; and is not good for Seed; also when Corn is more than ordinarily moist, or more than ordinarily dry, both are very ill signes, and shew either imperfect Corn, or imperfect keeping, for the best and good Corn indeed, ever holdeth an indifferent temperature, betwixt driness and moisture.

CHAP. XVIII.

How to keep all manner of Grain, either thrasht or unwasht, with least loss the longest time; and how to preserve it from all infirmities, and Vermine in the House or Garner.

Keeping of
Corn two-
fold.

TO proceed to the keeping and preserving of Corn and Grain, it is to be understood, that it is to be done two several ways, that is to say, in the Ear, and out of the Ear; in the stack, when it is cleansed and dressed.

Keeping Corn
in the ear or
in the chaff.

Touching the keeping of Corn in the Ear, or in the Stack, there is no better nor safer way than that already described in the sixteenth Chapter, being free from all offences whatsoever, that can come to hurt it.

Now there be others that cut off the Ears of their Corn, and then put them into great Chests or Hutches of wood (such as are very frequent and much used in *Ireland*, and other Countries where War rageth) and so keep it sweet and good many years : Others

Others use to beat it out of the ear, but not separate it from the Chaff, and then laying a lear of the Straw more than a foot thick, to lay a good thick lear of the thrasht Corn; and thus lay lear upon lear, till you have made up your stack, in such proportion as you shall think convenient; and this will keep all kind of Corn, or Grain, or other Seeds, sound, sweet, and fit for any purpose, at least a dozen years, or more, as some have supposed, without either too much drying, withering, moistening, or moulding. And surely this is a very excellent way for the storing up of much Corn in a very little room, and may as well be done with Corn as with straw; only it is not to be done in Barn nor House, because Mice, Rats, and other kind of Vermine will work much destruction thereupon, but on a Stack or Hovel made and proportioned in such form as was shewed before in the sixteenth Chapter, and so it will stand safe without all annoyance, as long as it shall please the owner to keep it; sure I am, it will last thus fully twelve years; yet some Authors affirm, it will last fifty years, but that is a space of years beyond my trial.

Touching the keeping of Corn after it is thrasht and dressed, it is divers ways to be done, as by stowage or place of lear, as Garners, Hutches, and such like, by labour and industry, as with the shovel, or else by device or medicine.

Keeping of
Corn out of
the Ear or
dressed.

For Garners, they be made divers ways, according to the nature Of Garners. of the Country, and custom of the people.

Some are made with clay, and some trodden with hair, straw chopt, and such like: but these are the worst, and do soonest corrupt Corn; for although they are warm, which is a great preservation to Corn, yet they yield dust, and from that dust is bred fleas, mites, weavels, and other Vermine which do spoil Corn, and make it easily rot.

Others are made of stone and lime, but they are subject against wet weather, to yield forth a moist dew, which corrupteth and rotteth Corn.

Others are made of Brick and Lime, and they are very good against the Weavel, and other small Vermine, but the Lime is sharp, and so consequently very unwholesome for all manner of Grain.

The best Garner that can be made to keep all manner of Grain in,

in, is made of playster, burnt, and brought into mortar, and so raising it up with the help of small stones hidden and placed in the midst of the wall, to make both the inside and outside of the Garner of smooth playster, no stone being seen but hidden at least two fingers thick on each side, and all the bottom also must be made of playster; for no floor keepeth Corn so well, of what kind soever it be; and these Garners would be placed as near as you can to the backs, or sides of Chimneys, or as near the air of the fire as you can conveniently; for as there is nothing more cold then plaister, yet it is ever so dry and free from moisture, that with no change of the air or weather it relenteth, but keepeth the Corn ever in one state of goodness, whilst the warm standing thereof is such a comfort in the winter, and the natural coolness of the thing so sovereign in Summer, that the grain ever abideth in one state without alteration.

Now for Hutches, or great chests, bins, dry fats, and such like, they are made of old, dry, and well-seasoned Oak-boards, plain-ed smooth, and close joyned and glewed together, with covers and lids made also very close, whereby little or no air can come in: some of these great Bins, or Hutches, made of dry boards, are made open and without covers, but they are not so good, for the air covering the upper-part of the Corn, and the middle part sweating, breedeth corruption, or mustiness, which hurteth and spoileth the Corn: besides, they are somewhat too warm, and thereby make any green Corn apt to corrupt and smell.

Of Hutches.

Touching the use of Garners and Hutches, they are principally to keep Malt after it is dried, or Barley, which is for the use of bread or meal; and here is to be noted, that the best manner of keeping Malt, is to keep it in the Corn, that is to say, in the dust, and other filth which cometh with it from the Kilne, as thus; when first you lay your Malt on the Kilne to be dried, you know there is at one end a certain sprout, or small thred, which grows from the Corn, and is called the Come, which by the rubbing and drying of the Malt falls away, and leaves the Corn clean, and snug of it self, and when you trim and dress up your Malt for the Mill, is winnowed and cleansed away: This you shall preserve and put altogether into your Garner or Hutch, which

which will be so mellow and ripen your Malt, that in the spending thereof, a peck will go further, than a peck and a half kept of a contrary fashion; and although some are perswaded that this Come or Malt dust, is a great breeder of the worm or weavel, by reason of the much heat thereof, being indeed of the purest of the heart of the Corn; yet it is not so, unless some rankness or moisture do get to the Corn; and then it breeds weavels in infinite abundance, and therefore by all means be sure that your Garners and Hatches do stand exceeding dry, and then there is no fear of the loss of Corn, nor shall you need to dress or winnow your Malt but as you spend it.

Lastly, here is to be noted, that although I here joyn Garners, Hatches, Chests, and Bins together, yet I make them not all of equal goodness; for the plaister Garner is absolutely the best of all, the close Hatch or Chest next, and the open Bin last; yet any, or all, sufficient enough to keep Malt, Barley, or small Seeds, divers years without imperfection.

It is written by some of the antientest Authors, that Wheat hath been kept in these close Hatches or Chests sweet, the space of fifty years; yet I hold the rule somewhat doubtful, both because Wheat of it self, lying so close packt together, is apt to heat and sweat, and that heat commonly turneth to faultiness, and the sweat to corruption; but that it may thus be preserved from worms, weavels, mites, and other vermine breeding in Corn, it is doubtless and infallible.

Now for the preservation of Wheat, which is the most principal grain, of greatest use, and greatest price, and therewithal most tender, and aptest to take hurt, the experiments are divers, as mens fancies, and practises have found out; for some Husbandmen hold opinion, especially the *French* and *Spanish*, That if you take the Lees of common Oyl (so it be sweet) and sprinkle it upon your Wheat as it lies, either in the Garner, or upon the floor, that it will preserve it from all corruption and annoyance whatsoever; nor doth it preserve Wheat only, but all other manner of grain whatsoever; nor doth it preserve Corn alone from mischief but if Corn by casualty be tainted or hurt, it doth recover it again, and brings it to the first sweetness; and if either worms or weavels be bred in it, the Oyl presently kills

To preserve
Wheat.

kills them, and frees the Corn from that mischief; as for smaller seeds, as hemp, line and rape, this Oyl doth not only keep them long and sound, but also feeds and nourishes them, and makes them better, either for the ground, or for use, either in the mill, or in Medicine.

There be others that use to take Chalk, and beat it to powder, and then scatter it amongst their Wheat, when they put it into the Garner, and have found that thereby their Grain hath been wonderfully preserved from all imperfection; and surely there is great reason for the same, because the driness of the Chalk drinketh up the moisture which sweateth from the Grain, and is the first breeder of all putrifaction: Also it cool-eth and asswageth the immoderate heat which is ingendred in the Corn, by reason of the packt and close lying together.

Again, there be others which use to lay great store of Worm-wood amongst their Wheat, which likewise preserveth it from all annoyances, especially from Worms and Weavels, as also from Mice, Rats, and such devouring Vermine; neither will the Corn corrupt or grow faulty, as long as the Worm-wood remains amongst it. In *Italy*, the careful Husbands use to take a certain dry earth or clay, called earth of *Olintus*, or *Cerintus*, and this earth they beat amongst their Wheat, and then put it into the Garner or Hutch, and it will keep it sound and sweet divers years together; then when they have occasion to use, with small reeing lives to dress it from the Corn, and so preserve the dust, which will last and serve you many years together, even almost an age; as some have reported, and is at this day to be seen in many parts of *Italy*, and other places.

Again, I have for mine own part seen in the Island of the *Azores*, certain very great large Caves, or pits made under the earth, of the fashion of a *Spanish* earthen Lear, that is to say, great and spacious in the midst, and narrow both at the top and bottom, like a brass Pot, or great glass Vial, and made as smooth within as may be, and in these caves or pits, they first lay chaff, and then their thrasht Wheat, filling it up full to the top, or within a handfull thereof, which they fill again with Chaff, and then closing the top with a broad stone, they cover it

it over with earth so close and unperceivable, that you may walk or travel over it without any suspicion; and for mine own part, I have myself digged up many of these pits, and found great store of Wheat, both in the High-ways, and other most suspicious places; and surely it is thought, and experience in those places makes it good, that in these Caves or Pits you may keep Wheat as long as you please, as *Pliny* speaketh of, which is an hundred, or an hundred and twenty years, without hurt or putrefaction, either of heat, moisture, worms, weavels, or any other Vermin whatsoever which consumeth or devoureth Corn; yet how I may recommend this experiment to our Nation, I am uncertain, because the much moisture of our Climate, and the cold rawness thereof promiseth a contrary effect; for the great enemies unto grain, are violent cold and moisture, and with us it is very difficult to make any Caverns under the earth but they must be subject unto both: Therefore only to those which live in hot sandy Countries, high and free from springs or waters, or in dry and rocky grounds, where these mines or hollow places may be hewed out, as in a main and firm Quarry, I recommend the trial of this practise, with this assurance, that where the ground is fit for that purpose, as any of your sand grounds or gravel earths, as in *Norfolk, Middlesex, Kent*, and many other sandy Climates; or in rocky situations, as in *Nottingham, Bath, Bristol*, and such like, you may keep your Wheat good, sound, firm, and free from all annoyances, even as long as you shall please to keep it; both without putrefaction in it self, or waste made by other devouring worms and vermin; but if in a more moist place, as in clay or other mixt earth, which ever is vomiting wet and dewish humours, you are forced to approve this experiment; then you must necessarily lime all your Cave or hollow Mines within, at least half a foot thick with tyle sherd and plaister laid wall-like together, and then the plaister dawb'd at least three fingers thick above all, and so you may keep your Corn as safe and as sound as any hot soyl whatsoever; but without it your Corn will not endure a week without rottenness, foulness, mouldiness, and stinking.

To conclude, having shewed you all the most approved and best experiments for the keeping and preserving of wheat, there

is none better, or so good as this silly plain one, which I will here deliver: and that is, first, as near as you can, reap your Wheat at the change of the Moon; for Wheat which is so reaped, is seldom or never subject to loss or putrefaction (being got in dry, or in husbandry manner ordered and handled) because that Celestial body hath such a power and influence in the growth of Corn and Seeds, that as the groweth, so they grow, and as the waneth, so they abate and wither.

And truly for my own part, in my poor Husbandry, I have made this observation, that I have reaped Corn at the beginning of the wane (to mine eye and judgment) great, full, and bold as the Plow-man calls it, and within few days after, when it came to thrashing, I have found it most poor, hungry, and small Corn: nor could I give or find any other reason for the same, but that it was reaped in an ill and most unseasonable time: for, on the contrary part, I have ever found that Corn reaped upon the change, being ripe, full, and every way fit for the Barn (and the weather fair and dry above head) it hath never altered, but kept his first and perfect goodness; so that I cannot chuse, but in this case think the observation of the Moon to be a thing of great effect and validity, appointed by God as a second means for our help and profit: when therefore your Corn is thus seasonably and well got in, you shall thrash it, winnow it, and dress it so clean as you can, then carry it up into your Chambers or lofts appointed for that purpose, of whose floors by all means I would wish to be cast of the best plaister; for boards is too hot, and clay is too apt to breed Vermine: On this plaister floor you shall spread your Wheat, not above a foot thick at the uppermost, and so let it lie; observing once in four or in five days at the most, with a large wooden shovel to turn the Wheat quite over and over, and thus doing, you shall be sure to keep it as sweet, sound, and good, as when it first came into the Barn: for neither can the heat, sweat, nor coldness offend it, the first being cooled and tempered by the opening and dispersing; the second dried up by the air which hath free recourse unto it, and the last comforted by the labour and tossing of the shovel, casting it up and down from one place to another: and though some curious Husbands may object, That this manner of keeping Corn drieth

it somewhat too much, and thereby disableth it for some particular purposes, as for seed and such like: yet in that they are much mistaken; for this stirring and moving of Grain, is not a drying of it, but rather a great comforter and strengthner of it, dispersing back into the Corn, those wholesome vapours which should do it good (by way of communication and fellowship with the Grain) and expelling those ill humors which sweating out of it would otherwise confound and hurt it, so that in conclusion, for the true and long keeping of Wheat sweet, sound, and perfect, without loss or corruption, there is no way more safe or easie, than this last expressed; being of all other the best, although in shew it appear sleight and trivial, as for the most part things of the greatest moment in this nature do: but to the judicious Husbandman I refer it, whose aim is at the worth and substance, not at the words and curious gloss, set forth in strange ingredients.

Touching the keeping of Rye; or Massin, or, as some call it, Munck-corn, or Blend-corn, being part Rye, and part Wheat mixed together, that which preserveth Wheat, will also preserve it, for they are Grains of like nature, only the Rye is somewhat hotter and drier, and therefore will endure somewhat more moisture: yet to speak particularly touching the preservation of Rye, there is nothing better than the plaister floor, and oft turning; the close Hutch is also exceeding good, so is the Pipe or dry fat, but being once opened, and the air entering into the Corn, except it be soon spent, it will soon putrefie; for though in the close keeping, it last long, yet when it comes to the air it will quickly receive taint. Lastly, for the profit in keeping of Rye, indeed there is nothing better than to ply it, and tread it hard into Vessels or Barrels, wherein salt hath been much lodged, or other brine or salt matter: provided always that the Vessels be sweet and untainted, no ways subject to faultiness or other unfavoury smells, from which there is no preservation.

Concerning the preservation and keeping of Beans, which are indeed a more gross and fatter Grain than any heretofore written of, and out of the fulness of their substance, more subject to moisture and those dankish humors which corrupt Corn:

To preserve
Beans.

The careful Husbandman observeth two Rule,,first,not to thrash any Beans or Pulse, more than for necessary use (as for the Stable or Mill) before it be middle *March*, at which time the Grain, having taken a kindly sweat in the Mow, Stack, or Hovel, is become so dry, firm, and solid, that no floor, wall, or other place of Lear can make it relent, or give again (except great abuse, and too moist keeping) for it is to be understood, that this sort of Pulse or Grain is of it self so exceeding moist and apt to sweat in the Mow, that all Husbandmen endeavour by no means to house it, or lay it within doors, but seek to make it up in stacks and hovels without doors;not so much that house-room is wanting, as that the benefit of the Sun, and Air, which pierceth through the same, drieth and ripeneth the Corn in such kindly manner, as maketh it as serviceable as any other : and indeed, the first invention of stacks, hovels, reeks, and such like, did not spring so much from the want of housing, as from the good and profit which the Husbandman found to accrue to this kind of Grain, only by reason of laying it abroad ; for it is certain, that Beans and Pease neither grow together, nor ripen together, but put forth their increase one after another ; for you shall see upon one stalk, blooms, swads and ripe cods : so likewise in the gathering of Pulse (when it is reaped from the ground) you shall see some dry and withered, some ripe, some half ripe, some absolutely green, and as but now in growing.

Now all these must be reapt together, and if you stay them in the field till all be of like driness, questionless the oldest will shake and shed upon the ground before the youngest be ripened, and what that loss will redound to, every Husbandman can judge : So also to house and mow up in a close mow, the dry Pulse with the green, surely the green cannot chuse but inflame and heat the dry, and the dry so heated to give fire to the green, till both be either rotted or consumed ; and hence it came, that expert Husbandmen devised to lay their Pulse, for the most part, ever without doors, in stacks, reeks, and hovels, that the Sun and wind passing thorow them, might bring all the grain to an equal driness and hardness.

Again, Pulse being of all grain the coordest and fullest of substance.

stance in it self, and the straw ever big and substantial, and full of broad thick leaves, ever moist and sappy; it must needs follow that this grain must ever be most apt to sweat in the mow, and so necessarily craveth the greatest store of air, and the longest time in drying; so that to return to my first purpose, it must needs follow, that no Beans or Pease can be ripe or seasoned in the mow, till it be mid-*March*, at least; for it is an old saying, among the best Husbands, *that a March wind is salt which seasoneth all Pulse*: And if use or necessity compel men to thrash their Pulse before that time, the Grain is so imperfect, that it must be Kilne-dried, or else it is fit neither for the use of Bread nor Provender.

Now herein is to be understood, that Pease or Beans which are Kilne-dried, may be kept sound, sweet, and good, either on plaister-floors, boarded-floors, or earthy-floors, the space of many years, without turning, or tossing; nor need you to respect how thick the heap lie, since Beans after they are once dried on the Kilne, or in the Sun, never-after will thaw, give again, or relent, but remain in their first soundness: But if you preserve your Beans for other uses, as to boyl in your pot, and feed your Servants withal, as is used in *Somersetshire*, and many other Westernly parts of this Kingdom, then it shall be good for you to take Oyl-barrels, Oyl-cask that is sweet, and first calk them all over within and without with ashes, and then put your Beans therein, and close up the heads, and as it is affirmed by divers great Authors of Husbandry, it will keep Beans sound, sweet, and good, twenty years; nay, some give instances of Beans which have been thus kept and preserved the space of one hundred and twenty years; and surely I am perswaded that if Beans be well and dry got, at thrasht at a seasonable time of the year, as in *March*, *April*, that thus kept, they will last the utmost of a mans pleasure.

Now for the keeping or preserving of Pease or Fetches, which of all other Grain whatsoever, is most subject to rottenness and imperfection, because out of its own nature it is apt to breed Worms, Weavels, and Mites, by reason of the much lushiousness and sweetness of the kernel of the Grain: you shall in all things observe the same courtes that you do with your
Preserving of
Pease or
Fetches.
 Beans;

Beans, both touching your gathering, drying, stacking, and also thrashing; for as they are most apt to go together, being near of nature and condition one to the other, so it is fit that you do apply unto them one and the self same Medicine or remedy.

And herein is to be noted, that as Pease are of more general use then Beans, as for Horse Provender, feeding of Swine, Pidgeons, Pullens, and such like; as also for Bread, Pottage, to boyl with or without meat; for certainly, it is a most wholesome and strong food, as may be seen by the people of *Devonshire*, *Cornwal*, and *Somersetshire*, of whose great strength of body not any reason can be given more probably than their much feeding on this grain, and their acquaintance with much and strong labour: So they ought with more care and circumspection to be preserved from all those annoyances that naturally are apt to hurt them, as worms, rottenness, mould, mustiness, and such like.

And first, there is nothing better for the long and well keeping of Pease, then the very well drying of them, either in the Sun, or on the Kilne, especially those which you use for Bread, Provender, or feeding of Swine: and although some Husbands use to feed Swine with undried Pease, nay, many times both undried and undrest, that is to say, the Pulse or Chaff not taken away; and are of opinion that the Grains so given, sooner feedeth and fatteneth up Swine than the other, yet they are deceived; for albeit it swell and puff up a Beast, yet is the flesh and fat neither so good, sound, and long lasting, as that which is gotten with dry food, nor doth it make a Swine so thirsty; and the Husbandman is ever assured, that when his Swine drinks not well, he feeds not well: therefore what Pease you keep for Bread, or feeding of Cattle, by all means dry them well, and lay them either in Garners or Floors, and they will last sound and good without breeding worms or weavels, as long as you please. But those which you keep for food at your own Table, as in Pottage, or other uses, must by no means be too much dried, because then they ask a double time in boyling, and spend a double quantity of fuel in their preparing.

Some use after they be clean thrasht and drest, to lay them in a cool close Garner, either of Plaister, Earth, or Boards, of which Plaister is the best; as for any thing that relenteth, or yieldeth moisture, as lime, stone-walls, or such like, it is most hurtful, and immediately maketh Pease mould and rot: also it is good to lay your Pease in thick heaps in your Garner, for that will preserve them moist the longer time; but to spread them thin upon the floor, by which means the Sun, Air, and Wind may pass thorow them, is not so good, for it drieth them too sore, and taketh from them much of their sweetness and goodness, which ought most carefully to be preserved. There be others which preserve these tender meat Pease by thrashing them up, and then letting them lie in their own Pulse or Chaff, and not dressing them, but as they have occasion to use them; and questionless this is a very good and laudable way; for the Pulse and Chaff doth maintain them sweet and moist, and yet keepeth them without so warm and comfortable, that they last much longer, than any other way whatsoever; and in this manner of preserving Pease is to be noted, that by all means you must let them lie upon a dry earthen floor, so long as they are in the Chaff, rather than on the board, or on Plaister, and yet in this case the boards are better than Plaister.

Lastly, and which indeed is the best experiment of all other, if you intend to keep Pease any extraordinary long time, you shall take Barrells or dry Casks, well and strongly bound, and pitch them within exceeding well with the best Pitch or Bitumen that you can get, and then sprinkle the Pitch all over with strong Vinegar; then take your Pease, being clean and well drest, and put them into the Barrells, pressing them down close and hard; then head up the Barrells, and let them stand dry and cool, and they will preserve your Pease sound, sweet, and good for any use whatsoever, as long as you please, be it for ten, twenty, or thirty years, according to the opinions of ancient Husbandmen, and other Provant-Masters, that have lived and commanded in Towns besieged, and Towns of Garrison; neither shall any worm, mite, or weevil ever breed in it, or offend it; nay, if any have in former time.

Preserving of
Lentils or
Lupins.

time been bred in them, this manner of keeping the grain killeth them, and destroyeth them for ever.

Now there is another sort of Pulse, which are called Lentils or Lupins, which albeit they are not so generally used for the food and sustenance of man, yet they are for Horse, Swine, and other Cattle, as much in request as any grain whatsoever, and indeed do feed fatter, and sooner than other ordinary Pulse, and the flesh so fed, is sweeter and pleasanter both to the eye and to the taste, than that which is fed with Beans or Pease; also they are a Pulse very Physical and good for many Medicines, as may appear by the works of many learned Physicians; and these the longer they are kept, the better they are, and fuller of profit. To preserve them in good and sound estate, it is meet to reap them in very fair weather, and to stack them up exceeding dry, and if they be laid in the Barn, or any close house, it is not amiss; for they will indure housing better than any other Pulse, yet the sooner you beat them out of the straw, or thrash them up, the better it is; for Husbandmen suppose there is no greater hurt to this kind of Grain, than the long keeping it in the straw; for it is of such rankness, that the very straw and cods breed in it much putrefaction; and I my self observed both in *Spain*, and in the neighbouring Islands, where is great abundance of this kind of Grain, that they do no sooner gather it and bring it home, but immediately they thrash it; nay, some thrash it in the fields upon the Lands where it grows, and so bring it home, and then spread it on fair boarded floors in very great heaps, or lay it up in close Hatches, or Bins, such as wheat, and other white grain is to be kept in. If you dry this kind of Pulse in the Sun, or upon a kilne, with a very moderate and soft fire, and then lay it up either in a close Garner, or close Hutch, it will last many years sound, good, and without corruption. There be other Husbandmen which mix with this grain, when it is thrashed, a half part of hot, dry, white sand, or at least cover the whole heap of pulse with the sand, and do find that it keeps the grain very sound and good many years together. But to conclude, if you take strong vinegar, and a good quantity of *Laserpitium*, dissolve and mix them very well together, and then having laid your Lentils or Lupins together on

a fair boarded floor, in large, broad, and flat heaps, about two foot, or two foot and a half thick; with the vinegar and *Laserpitium* sprinkle over all the heap, and not any change of weather, frosts, worms, or other vermine shall do them hurt, but they shall remain sound and good as many years as you please. to keep them: there are other Husbandmen, that instead of this before rehearsed, take only sweet Oyl, and sprinkle it all over the Grain, and find the same vertue and effect, for neither worms nor other Vermine will touch it, nor will the radical humour thereof at any time waste or decay, but remain strong, full, and sound, without any kind of diminishing; nor shall you find any abatement of it, or shrinking in the measure, but that which was a bushel this year, will be also a bushel the next year, and as many years after as you please, which is no small profit to the owner.

Whereas on the other part, if the Grain be either dried in the Sun, on the Kilne, or by the Wind, you shall hardly have of every such bushel so dried, three pecks and a half again, which is by computation at every quarter, which is eight bushels, full one bushel lost, and yet this purchase thus preserved, as before said, shall be as good for any use whatsoever; fit for such Corn to be employed in, as any other dried grain whatsoever, and yield as much every way, and altogether as good meal, and as good meat.

Now touching the preserving and keeping of Oats, it is to be understood, that of all grain it is least casual, because of it self naturally it breedeth no evil vermine, and is again preserved and defended with a double Husk, whereby neither cold, moisture, heat, nor driness, is able so soon to pierce and hurt it as other grains, which are more thin clad and tender; yet because it is of great and necessary use both for Cattle and Pullen, and that neither the Husband nor Housewife can well keep house without it, you shall know, that the best way to preserve it longest, is, after it is thrasht, to dry it well, either in the Sun or on the Kiln, and then either put it in a close Garner, or close Cask, and it will keep many years sound and sweet.

Touching the preserving of Oatmeal, which is the inner Kernel of the Oats, and a grain of most special use in the Husband-

bandmans house, as in his Pottage, in his Puddings, and in many other meats necessarily used for the labouring man ; it is an experiment not altogether so curious as any of the rest formerly written of, for no Oat-meal can be made, but the Oats must be exceedingly well kiln dried, or else the kernel will not part from the hull, and being dried, as is fit, that drying is sufficient to keep and preserve the Oat-meal divers years.

Provided ever, that presently after the making of your Oat-meal, you put it into dry close Cask, or dry close Garners (but Cask is better) and so that it may remain exceeding dry, (for any thaw or moisture corrupts it) and as near as you can, let it have (if it be possible) some air of the fire, for the warmer it stands, the better and longer it will last, as experience sheweth.

Preserving of
any meal

For the preserving and long keeping of any sort of meal, there is no better way than first to bould and searse him from his bran, for the bran is very apt to corrode and putrifie the meal, and to bring it to a faultiness or mustiness : then into very sweet and clean dry cask close and well bound, tread in your meal so hard as you can possibly tread it, and then head it up close, and so you may either keep it by land or water so long as you please, and when you have any occasion to spend of it, be sure to loosen no more of the meal than you presently use, for the faster and closer the meal lieth together, the longer and sweeter it will last, for it is the gathering of the air that only corrupts it.

And here is also to be noted, that you should not presently as soon as your meal is ground, bould it from the bran, but rather let it lie a week or fortnight in the bran, in some close bin or trough, and then after that time bould or searse it, and you shall find it to afford you in every bushel, more meal by at least half a peck, than if you should presently bould it as soon as it comes from the mill ; whence it proceeds, that the cunning and skilful Baker will ever have a week or fortnights provision of meal before hand, which lying so long in the bran, pays double interest for the continuance.

Now if it fall out so, that either by trade or merchandise, or other occasions, you buy any meal by way of transportation, which is caskt up, (as much meal is sold by the barrel) you shall presently as soon as you have bought it (if it be for your own
use

use or expence) break open their heads, and empty the meal upon fair sheets on a clean floor, and then spreading it abroad, let the Sun and Air pass thorough it, which will dry up the sweat; and if there be any taint of faultiness, take it away, and bring the meal to his first sweetness, and then immediately bould out the coarse bran, and after, as was before declared, tread it hard into fresh and sweet cask; and thus you may keep your provision of meal all the year long: nay, if need require, two or three years; for after the first sweat is taken away, and kindly dried, there is no doubt to be made of any that shall follow after.

Lastly, touching the preservation and keeping of all manner of small seeds of what nature and quality soever they be, whether Hemp, Lime, Rape, Mustard-seed, or any other Garden-seed whatsoever, though truly and properly they last but one year, nor are fit for Seed or Increase after that date expired: yet in as much as they are medicinable after, and a much longer time; therefore you shall understand, that the best way to keep them safe and sound, and fittest for use and profit, is, first to gather them as soon as you perceive them to be ripe, and the weather being bright, clear and dry, then you shall dry and wither them in the shade, and not in the Sun, especially upon a plaistered floor, where the Sun looketh to the South, and be sure that as little Sun and moisture come to them as you can, for both are main enemies; which done, bind them up in bundles without thrashing, and so hang them up, and keep them in their own cods, and they will last for all uses, a full year, and for some particular uses two or three years; and in this manner you may also preserve all manner of herbs, weeds, flowers, roots, and the barks or rinds of all manner of trees.

Preserving of
all small seeds.

C H A P. XIX.

How to keep Grain, either for transportation by Sea, or for use in a Town of War or Garrison, from one year to one hundred and twenty.

TO speak of the Grains and Pulses which are meetest for the Sea, and their several uses.

The use of
grain and
Pulse at Sea.
Of Rice and
the Use.

It is to be understood, that the best and principallest Grain which is indeed both most sweet, most fresh, most pleasant in taste, and most lasting, is Rice, which although it grow not much in our Kingdom, but that we are beholden to our good Neighbours for the trade thereof, yet it is in such plenty where we fetch it, that we need neither complain of the scarcity, nor the cost, and so much the rather, in that a peck thereof will go further then a bushel of any other Grain : Of this Rice is made many good and wholesome dishes, some thick, some thin, some baked, some boyled, as this : If you take a quarter of a pound of Rice, and boyl it in a pottle of water, till it come unto an indifferent thickness, and then put it into a good lump of potted or barrellled butter, and as much Sugar as shall salt-wise season it to an indifferent sweetness, it is a dish of meat meet for an Emperour at Sea, wholesome, good, and light of digesture, and will be as much as four reasonable men can well eat at a meal ; for the nature of Rice is such, that it will swell in boyling, and grow to that bigness, that in an instant it will thicken a pottle ; some use the night before they boyl it, to steep it in so much water, as will only cover the Rice all over, and then the next day boyl it in a pottle of water or more, and the Rice so steeped will so swell, that all the first water will be drunk up, and a great deal of less boyling will serve to make it ready ; and sure, than this a man cannot find a cheaper way to feed men, since one pint of water, and the fourth part of a quarter of pound of Rice (which come not to above halfa penny at the dearest reckoning) is a meal sufficient for a mans eating, having Bisket and Drink proportionably. And this dish of meat being thus thin boyled, is called Sea-Lob-lolly, and after salt feeding, is wondrous wholesome and comfortable to any man, whether he be sick, sound or diseased, and both abateth infirmities, and hasteneth the healing of all wounds.

There be others, that after they have steeped this Rice (as afore-said) do then boyl it in like manner, till it be so thick that a spoon may stand upright in it, and no liquidness of the water perceived ; then put a good lump of butter into it, and boyl it with it, and stir it about, and it will make it come most clean out of the pot in which it is boyled ; then season it with

Sugax.

Sugar, and a little Cinnamon, and it will be a dish of meat right good and delicate, and meet for any man of what Quality soever, that is worth goodness or preserving; nor need the quantity exceed the proportion already prescribed.

Again, if you have Meal in the Ship, if you take of this Rice steeped in water, and a little lightly boyled and seasoned with Sugar, Cinnamon, and Ginger, and a good quantity of Butter, and then bake it in little Patties, you shall find it a most delicate pleasant, and wholesome meat, and that a penny in it shall go further, and give better contentment than four penny worth of Beef, Bacon, Fish, or any other hard salt meat; yet I do not wish any man of Ship-board to make this a continual feeding dish; for then it is both too pleasant and too strong, and where evacuation of some humours are wanting, may breed inconveniences in strong bodies; but rather use it once a week as a Physical nourisher, or for the comfort of sick and diseased men, whose stomachs are tane away, or else weakned; there may be made also of this Rice in time of necessity (being ground to a fine meal) an excellent good Bread or Rusk, which is pleasanter, sweeter, and much longer lasting than any made of Wheat, or any other Grain whatsoever; besides many other Seeds, which would in this place shew but too much curiosity to repeat.

The next Grain unto Rice, which is of estimation and great service at Sea, is wheat, of which although there be divers kinds, yet they are all alike for the serving of this purpose; only the large and thick hull'd wheat (being well dried) will last the longest, but the small and fine skinn'd Wheat yields the purer flour, and makes the better Meal: Now of this Wheat is made divers dishes of meat, for some take it, and bruise or beat it in bags till the upper skin be beaten off, and then having drest and winnowed it, boyl it in clean water till it burst, and grow as thick as Pap, then take it from the fire, and being hot, put it into several dishes of wood, or trays, so much in every dish, or tray, as may serve four men, and so let it cool, then give it to the sick or sound as you shall be directed, and it is an excellent good meat, either cold or else hot, and a little butter melted with it, or being again boyled in fresh water, and seasoned with Salt and a little Sugar, it makes an excellent Grewel, or Loblolly, which is a very sove-

Wheat, and
the use.

reign at Sea. Also your parched Wheat is a very good food at Sea, and of much request and estimation, being sprinkled with a little salt; and of this food a little will serve a man at a time, by reason that the much sweetness thereof soon filleth and cloyeth the stomach, yet it is wondrous light of digestion, and breeds great strength, and much good blood, as we daily find by experience.

Of Oat-meal
and the use.

The next Grain unto this which is to be recommended to the Sea (and which is indeed not any thing inferior to either of the other going before, both for strength and lasting) is Oat-meal, which by reason of the great driness, and drying thereof, feels little or no imperfection at the Sea, as being unapt to suck or draw in any of the ill or moist vapours thereof. Of this Oat-meal is made many good fresh, and comfortable meats at Sea, as Grewel, or Lob-lolly, by boyling it in fresh water, and seasoning it with Salt, and (if you have it continually) sometimes with Sugar and a few Currants, and a little Mace, which is meat of great strength and goodness, especially for such as are sick and weak; for it is a great restorer of nature, and a purger of the blood; also to steep the whole Grotes of Oat-meal a night in water, and then draining them, and putting it in a bag, boil it till the Grots break; then putting it out of the bag, butter it with butter, and it is excellent food; as also boyling Oat-meal in fresh Water with Barm, or Dregs, and the hinder-ends of your Beer-barrels, makes an excellent good pottage, and is of great use in all the parts of the West-Country, especially where Mariners or Sea-men live, and are called by the name of Drousson pottage. Also, of Oat-meal is made that meat which is called in the West, Washbrew, and may be made at the Sea at your pleasure, being a meat of that great account amongst *Devonshire* and *Cornish*-men, that they will allow it to be a meat of singular great strength and goodness, and withal so light of digestion, that a man can very hardly surfeit upon it at any time; and I am the rather induced to believe the same, because I have observed and seen many of the labouring men of that Country to eat such an unmeasurable quantity thereof, that in mine eye one mans Supper would have served a whole family.

But

But you will say, Hunger and labour are such excellent Sauce, that they digest any thing.

To that I answer, That I have seen Gentlemen and Gentlewomen of that Country, of whom as much curiosity hath attended, as is liable to the City; nay, such as have had sickness their best familiar, yet eat of this with great and sharp appetite, and when health was most to be feared, then to boast of most soundness. This *Wash-brew* is to look upon like Painters Size, or new made Jelly, being nothing but the very heart of the Oat-meal, boyled and drained to that height and thickness, having neither Hull nor Bran in it, but the pure Meal and Water, and is to be eaten either with Wine, strong Beer, or Ale, or with clarified Honey, according to mens stomachs and abilities. Now this the eaters thereof affirm, that by no means it must be chewed, but rather swallowed by the spoonful whole, because chawing like a Pill makes it taste unpleasant. There is again another meat to be made of Oat-meal, which is called *Girt-brew*, and is somewhat more course, and less pleasant than *Wash-brew*, having both the bran and hulls in it, yet it is accounted a food of a very good strength, and exceeding wholesome for mans body; and of my knowledge much used and much desired of all labouring persons that are acquainted with it: Many other foods there are to be made of Oat-meal, but these shall be at this time fully sufficient.

The next Grain to this I account Barley, which may be every way used like unto Wheat, either to make Grewel, or to be creyed, parcht, or boyled; and for Barley for this purpose of food, the best is French Barley, the next is Barley-big, or bear-Barley; and the worst are the spice or Battledore-Barley, and our common English Barley. Of Barley and the use.

And as Barley or Wheat, so you may use your Buck, and your *Indian Siligo*, for they are of like nature, only they are a longer time in their beating, steeping, and boyling, because they are naturally more hard and more dry, by reason of the heat of the Climate in which the best grow; and it is ever to be observed for a Rule, that the drier you keep your Corn at Sea, the better it is, and sweeter, and longer lasting. Buck and the use.

Now

Of Pulse, and
first of Beans.
The use.

Now having shewed the use of these lighter grains, I will come to Pulse, and shew their use and benefit at Sea, or in besieged Towns : and of Pulse, I will first speak of Beans as a principal food, wholesome and strong, and though not so fine and light of digestion as of any of the former, yet exceeding hearty and sound, and a great breeder of good blood : They are for the most part to be boyled whole, till such time as they appear soft and tender, or begin to break, and then drained from the water are served in Trays, and well salted, and so eaten ; a pottle whereof is thought a full proportion for four men : and of these Beans there are divers kinds, as the common Garden-bean, or the French-bean, which is great, broad and flat, and these are the best to boyl either with meat, or by themselves, and ask the least labour, because their outer skin is most tender, and the inward substance most apt to be molified and softned, they may also be boyled when they are young and green, and when they are old and dry, and the meat at both times is good and savory.

The French-bean.

The Kidney-bean.

The next Bean to these are the Kidney-bean, which is flatter and lesser, & nearer the proportion of a Kidney, than the French-bean is, and this is also a Garden-bean, and whilst it is young and green is to be eaten Sallet-wise after they are boyled, both the Cod and Bean together, and it is certain, a better Sallet cannot be tasted ; for the Cod or Husk is every way as excellent in taste as the Bean is ; but after they grow old and dry, and that the moisture is gone out of the Cod, then it is meet to thrash them, and boyl them like the French-bean, and they are every way as good meat, and as soon boyled, and as tender.

Common-field Beans, the use.

The next Bean to these are your common and ordinary field Beans, which having tough and hard skins ask more boyling than the other beans, and are somewhat harder in taste, yet a good sound food also ; there be many that parch them in the fire, and think them then the best meat, because the fire sooner breaks the skin, and softneth the kernel ; because they cannot be done so abundantly, and therefore are not so much in use.

Of Pease, and
the use.

After this great sort of Pulse, I will now speak of the small sort, as Pease, and their like ; and of Pease there are two kinds, the Garden-Pease, and the field-Pease, and for this use (albeit both are very good, yet the Garden-pease are best, for they are soonest boyled

boyled and are most tender, and serve for most use, as for pottage, boyling, parching, speling; and of these Garden pease, there are divers kinds, as white pease, French pease, Hastings, Rounsivals, and such like, the first being the longest lasters, the second the pleasantest in taste, the third the earliest and tenderest, and the last largest and fullest.

The field pease are only of two kinds, as the white pease and the gray pease; and they seldome make pottage, because they are unapt to break, but are only for boyling and making of leap pease, or for parching, yet a good and a strong food: and as we use pease, so in other countries they use Lupins, Lentils, Tares, Fetches, and such like smaller pulse, but they are neither so good, wholesome, nor savoury in taste, being a kind of grain more rank, fulsome, and breeding of ill blood and infection within: these in cases of Sea-fare and war-fare, ought principally to be eschewed and shunned.

Several sorts
of Garden-
pease.

Now it resteth after this long digression of these severall grains, and their uses, with the meats and profits which are made of them, that we come to the safe manner of keeping and preserving them either by Land or Water, for Victual, or Transportation, so as they may last and indure without ill sinell or rottenness.

And first for transportation of grain by Sea, it is two wayes to be done, as either in great quantities for trade and the victualling of other nations, or in smaller quantity for victualling the men in the Ship, prepared for a long and tedious voyage.

Grain for
trade.

For the transporting of Grain for trade in great quantities, it is to be intended the voyage is seldome long, but from neighbour to neighbour, and therefore commonly they make close decks in the ships to receive the grain, fair and even boarded, yet if such decks be matted and lined, both under, and on each side; it is much the better; and this matting would be strong and thin. There be some which make the decks only of mats, and sure it is sweet, but not so strong as the boards: therefore the best way of transportation, is, to have strong boarded decks well matted; and then spreading the Corn of a reasonable thickness, to cover it with matting again and then to lay corn on it again, and then mats again, that between every reasonable thickness of

To transport
Grain for
Trade.

Grain a mat may lye ; the profit whereof is , that when the Corn with his own heat, and the working of the Sea shall begin to sweat, which sweat, for want of air to dry it up, would turn to putrefaction.

Then these mats thus lying between, will not onely exhale and suck up the sweat , but also keep the Corn so cool and dry, that no imperfection shall come unto it. And here is to be noted, That these mats should rather be made of dry white bents, then of flags and bulrush ; for the bent is a firm, dry, crisp thing, and will not relent or sweat of it self, but the flag or bulrush is a spurgy and soft substance, which is never empty of its own and other moistures.

Transporting
of Victuall.

Now for transporting of Grains, for Victualls for the Ship, which is in much smaller quantity, because it is but for the private use of a few within the ship ; the onely best and safest way, is, to take Salt-fish barrells, or any Cask in which any Salt fish hath been piled, as Cod, Herrings, Salmon, Sprats , or any other powdred Fish ; and whilst the vessels are sweet , you shall chalk them both within and without with plaister , daubing them all over , then into them put your Grain of what kind soever it be , and head them up close , and then stow them in such convenient dry place of the ship, as you shall think fit, and questionless if belief may be given to the worthiest Authors which have writ in this kind, you may thus keep your Grain sweet, sound, and in full perfection from one year to an hundred and twenty years ; but certainly daily experience shews us, that all kind of Grain thus put up and kept , will remain sound and sweet, three, four, and as some say, seven years, for so far hath lately been try'd : and what here I speak of ship-board, the like may be done in any Town of War or Garrison, whether besieged, or not besieged, or in any other place , where any necessity shall compel ; the proof of this manner of pilling or putting up of Grain, serveth as well for Land as Sea.

CHAP. XX.

*The Enriching of all manner of barren Grounds, and to
make it fruitful to bear Hopps.*

THe Hop of all plants is the most tender, and can endure neither too rich a ground, nor yet too poor: for being planted in the first, it bringeth forth only leaves and nobells, and in the latter yieldeth neither leaves nor bells.

Now in the first sort of Ground, which is fertile and rich, Abating fertility. have nothing to do but only to advise how you may allay and lessen that too much fatness, by mixing your hills well with Chalk, or small sharp Gravel, if it be a hassel or mix'd mould; and with good store of red sand if it be a stiff clay, for either of these mixtures will in short space abate any fertility.

But if the soyl be contrary to this, that is, extream barren, Increasing of fertility. then you shall seek by these means following to increase the fertility. First, when you have taken a view of that barren earth, which you intend to convert to a Hop-garden; you shall first look to the situation thereof, whether it lye high or low, whether it be subject to inundations or drownings, or that it lye safe and free from any such annoyance: If it be subject to great Choice of Earth. and deep over-flows; then it is no ground for this purpose; but if it be onely lyable but to some small washings, then you may by a few small drains and sewers cast through your alleys, convey away the water to some lower grounds, so as it may not continue long in the Gardens to do hurt. Besides, for a further safety to the Hop, you shall make your hills a great deal bigger and higher, that when any over-flow shall happen, the water may not reach above the mid-part of the hill at the most, for the root may endure moistning, but not drowning; and this water thus running through the alleyes, and not drowning the root, will bring to the ground very much fertility. But howsoever, after you have eas'd your ground of these particular faults, yet the general fault, which is barrenness, will remain still: therefore, having plotted out your Garden, and fenced it sufficiently about, you shall then cast up your hills about *Michaelmas*, placing Draining water. them

Casting of
hills and
allies.

them in a very orderly manner, and making alleyes between them of four or five foot breadth between hill and hill, so as a man may walk at pleasure through and about them: neither shall these hills stand all directly behind one another, for so one will
 ○ ○ ○ ○
 overshade another, which is an
 ○ ○ ○
 annoyance, but according to
 this Figure, where there is a largeness of space, and a by-passage,
 ○ ○ ○ ○
 through which the Sun may come to give comfort to every Plant.

These hills, if the ground be free from water, may be raised about two foot, or a foot and a half high, and of a compass answerable to the height; neither so little, that the hill may be sharp like a Sugar-loaf, nor yet so big, that the hill may lye flat, and so retain and hold any rain or wet, which shall fall upon it; but you shall keep a due middle proportion, making the hill convenient for your Plants and poles, and so as it may shoot or put off any wet, or other annoyance, which shall fall upon it.

The composition of the
enriching of
hills.

Now these hills you shall not make intirely, all of one mould, but you shall take, as it were, a third part or better thereof, then another part of the earth which lyeth under dung-hills, and the last part of Sope-ashes; and these three bodyes you shall mix equally together, and of them compound your Hop-hills: but if this seem somewhat difficult, and that you cannot find enough for your purpose of either of these manures, then you may take three parts of the natural earth, and but onely a fourth part of the other two, and therefore mix your Hop-hills, and it will be sufficient to afford you profit enough, provided you be able once in three or four years to renew it, for so long this will last in full strength and power.

Preparing of
the allies.

When you have thus made up your hills, you shall then pare up with a paring shovel all the green swarth quite through all your allies at least four fingers thick, and with the swarth so pared up, you shall cover all your hills almost to the top, turning the green swarth next unto the earth, so as it may rot, for that is an excellent manure also: then when your allies are all
 thus.

thus cleansed of their swarth, you shall take good store of braken, or fern, and throw it all over quite thorow all the allies, so that it may lye in a good thickness, almost to the midst of the hills, which having all the Winter to rot in, will not only be an exceeding comfort to the hills, and preserve both them and their plants from many evils, but also being shovelled up together with the earth in the spring time, will be a marvellous strong manure wherewith to replenish the hills, and to make them to prosper exceedingly, and to save much other cost and charges as well in manure as in carriage.

When your hills are thus enriched, and your allies thus prepared, you shall then open your hills in the top, and set your plants, that is to say, in every hill four plants at the least, being well prepared; and this should be done in the month of *October*, and these plants must be set good and deep in the earth, and covered all over at the least four fingers thick: and if with the earth which covereth these plants you mix Ox-blood and Lime, it will not onely give great comfort and nourishment to the Plants, but also defend and save the roots from worms and other vermines, which otherwise would seek to destroy them.

The Planting
of Hopps.

After your Garden is thus planted over, you shall then let it rest till the following Spring, and about *April*, finding the small Twines of your Hopps issued out of the Hills and running alongst the ground, you shall then set up your Poles, which Poles, so they be long and straight, may be of any wood you please, as either Ash, Elme, Withy, Willow, or Sallow, and in the setting up of these poles, you shall have two very carefull respects: First, that in putting in of the poles, and fastening them with the earth, you do not hurt the Hop roots, which a small carelesnesse may do, but be sure to set them cleer at the roots; and that you may do it the better, and make your poles to stand the faster, it is good that you have an iron auger, there with first to pierce the ground, and then to put the pole after, and so ram it in hard that it may not stir. The second care is, that you place not one pole to overshadow another, but that they may stand so cleer one from another, that which way soever the Sun shall cast his beames, yet every plant (as it winds about the

Poling of
Hopps.

the.

the pole) may be an equall partaker of the same.

This, with a small observation in the setting up of the poles may easily be performed : the number of poles that you shall set on every hill, must be answerable to the Syens which shall issue from the roots, allowing to every pole two Syens at the least, and not above three at the most : these Syens (when your hills are poled) you shall with your hands twine about their several poles, and those which are but new peeping from the ground, you shall so fold among the other Branches, as they may of themselves run about the pole, and as these, so also all the other twigs, which are any way derived from the main Sien, leaving not any at all to run upon the ground; for that is altogether profitless, and to no use.

Of weeding
Hops.

For the weeding of this barren earth thus made into an Hop-Garden, there is little care to be had: for first, the soap ashes wherewith the hills are manured, the Ox blood and the Lime, are such enemies to all manner of weeds, that they will not suffer any to grow where they abide: Next, the Braken and Fern, which covereth the alleyes, is such a poysoner and smotherer of any thing that shall grow underneath it, that it will not suffer any weed to peep or spring up through it; yet if in any especial place, where neither of these defences come, it happen that any weeds do grow, then you shall with your best care cut them away, or pull them up, and so your Garden shall remain comely, pleasant and fruitfull to every prospect.

CHAP. XXI.

*A generall computation of men, and Cattels labours :
what each may do without hurt daily.*

Plowing and
Sowing.

TO speak generally of all Husbandly works, where the Country is tolerable, without any extraordinary difficulty, you shall understand, that a man may well in stiff grounds, plow an Acre, or an Acre and a half, and in light sand grounds two or three Acres with one Team in a day, and he may plough and sowe in stiff ground two Acres and an half each day, and in light ground four at least with one Team; and alwayes what he soweth, that he may harrow the same day also.

A man may well mow of good and deep loggy meadow, or of rough, uneven meadow, every day one acre ; mowing clean and making a smooth board of well standing and good smooth meadow, an acre and a half each day : and of very thin and short grass, or upland meadow, two acres at the least every day.

Also, he may mow of Corn, as Barley and Oats, if it be thick, loggy, and beaten down to the earth, making fair work, and not cutting off the heads of the ears, and leaving the straw still growing one acre and a half in a day : but if it be good, thick, and fair standing corn, then he may mow two acres, or two acres and half in a day ; but if the corn be short, and thin, then he may mow three, and sometimes four Acres in a day, and not be overlaboured : Also of beans he may mow as much, and of pease mixt with beans, having a hook to follow him, no less ; for they are works in this nature most easie, and least troublesome.

One man with a Binder may well reap an Acre of Wheat or Rye in a day, if it be principal good and well standing, but if laid or beaten down with weather, then three rood is fully sufficient for a dayes labour ; but if it be thin and upright standing, then he may reap and bind five roods in a day : Of small pease, Fetches, and such like, a man may well reap two acres every day.

Now forasmuch as it is a custom in divers Countries (and truly it is exceeding profitable and worthy imitation) to sheaf and bind up both Barley and Oats, as well as Wheat or Rye, and that both saveth much Corn, and also makes it take a great deal less room, and that this labour is to be done after the mowers, as the other was after the reapers, by gathering the Barley, or Oats up without a sickle or hook, as it lyes in the swath, and so binding it in sheafs, you shall understand, that one man in a day shall bind as much as one mower can mow ; and if the man be any thing skilful in the labour, two binders will bind as much as three mowers can mow.

For the gathering or inning of Grain, no man can proportion the number of loads, or quantity of ground, shall daily be brought home, sith the journeyes are uncertain, some going

Gathering in
of Grain.

a mile, some half a mile, and some two mile : therefore it is the Husbandmans best way, the first day to go with his Team himself, and both to observe the labour and distance of place, and by that to compute what may be done after, without hurt to his cattel, and where he fails of any hope, there to make a strict account of the errour; for it is either ignorance or carelessness which brings forth mischances, speaking of husbandry, as over-throwing the Team, over-loading the Team, breaking necessary instruments, or not respecting the wayes and passages; any of which may in a day hinder more then half a dayes labour.

Ditching.

Again, a man may in a day ditch and quickset of a reasonable ditch four foot broad, and three foot deep, a rod or a pole a day; allowing sixteen feet to the rod, and so of large measure less ground, and of less ground larger measure according to the sufficiency of the fence which you purpose to make.

Hedging.

A man may hedge also in a day, if the hedge be good and substantial, that is to say, five foot high, well bound, thick stackt, and close laid, two rod in a day; and if the work be lower or thinner, then double so much more according to the former proportion.

Plashing.

For this plashing of hedges, or making a quick fence, if he do it workmanly, and that the growth be high and well grown, and then he lay it thick, close, and strongly bound in the top, turning the quick downward and inward, to plash a rod a day, is as much as any man can well do: but if he plash it after the west-country fashion, that is, onely cutting it down, and laying it along close to the ground, seeking only thickness, and not much guard or comliness, then he may well plash a rod and a half a day without trouble: And sure in this work is great care and art to be used, as well for the preservation of the quick, as the goodness of the fence, being a thing of worth and validity to every Husbandman.

Delving.

Again, a man may delve or dig, as for Garden mould, Hemp-yard, Flax-yard, or for the setting of corn, or for levelling of uneven places, one rod in a day, and the ground so digged and delved, he may rake, dress, and level in the same day also; but if he dig it deep, and trench it, and manure it, as is meet, either

ther for Garden, Orchard, or Corn-setting, then to delve half a rood in a day, is a very great proportion, because ordinarily to delve, as to receive ordinary Seeds, requires but one spade graft in depth; but extraordinarily to delve, as for enriching and bettering of the ground, and to cleanse it from stones, weeds, and other annoyances, will require two spades graft at the least.

Lastly, a man may thrash if the Corn be good and clean, without some extraordinary abuse or poverty in the grain, in one day four Bushels of Wheat or Rye, six bushels of Barley or Oats, and five bushels of Beans or Pease: but then the Pulse must be imagined to be exceeding good, otherwise a man shall thrash less of it, than of any other kind of Grain; for as when it is well laden, it yieldeth plentifully, so when it is poor and lightly laden, it yieldeth little or nothing, and yet hath not one stroke less of the flail, nor any labour saved, more than belongs to the best pulse whatsoever, being ever at least three times turned, and four times beaten over.

Having thus generally run over (in a short computation) the labours of the Husbandman, I will now briefly as I can, go over the particular days labour of a Farmer or Plow-man, shewing the particular expence of every hour in the day, from his first rising, till his going to bed, as thus for example: we will suppose it to be after *Christmas*, and about plow-day (which is the first setting out of the Plow) and at what time men either begin to fallow, or to break up Pease-earth, which is to lie to bait, according to the custom of the Country; at this time the Plow-man shall rise before four of the Clock in the morning, & after thanks given to God for his rest, and prayer for the success of his labours, he shall go into his stable, or beast-house, and first he shall fodder his Cattle, then cleanse the house, and make the booths clean, rub down the Cattle, and cleanse their skins from all filth; then he shall curry his Horses, rub them with cloaths and wisps, and make both them and the stable as clean as may be; then he shall water both his Oxen and Horses, & housing them again, give them more fodder, & to his Horse by all means Provender; as Chaff, and dry Pease or Beans, or Oat-hulls, Pease or Peans, or clean Oats, or clean Garbadge (which is the hinder ends of any Grain but Rye) with the straw chopt small amongst it, according

Thrashing.

The particular expence of a day.

ding as the ability of the Husbandman is.

And whilst they are eating their meat, he shall make ready his Collers, Hames, Treates, Halters, Mullens, and Plow-gearcs, seeing every thing fit, and in his due place, and to these labours I will also allow full two hours, that is, from four of the clock till six; then he shall come in to breakfast, and to that I allow him half an hour, and then another half hour to the gearing and yoking of his Cattle; so that at seven of the clock he may set forward to his labour, and then he shall plough from seven of the Clock in the morning, till betwixt two and three in the afternoon; then he shall unyoke and bring home his Cattle, and having rubb'd them, drest them and cleansed away all dirt and filth, he shall fodder them, and give them meat; then shall the servants go in to their dinner, which allowed half an hour, it will then be towards four of the clock, at which time he shall go to his Cattle again, and rubbing them down, and cleansing their stalls, give them more fodder: which done, he shall go into the Barn, and provide and make ready fodder of all kinds for the next day, whether it be hay, straw, or blend-fodder, according to the ability of the Husbandman.

This being done, and carried into the stable, Oxe-house, or other convenient place, he shall then go water his Cattle, and give them more meat, and to his Horse-Provender, as before is shewed: and by this time it will draw past six of the Clock, at which time he shall come in to supper, and after supper, he shall either by the fire side mend his shoes both for himself and their Family, or beat, or knock Hemp, or Flax, or pick and stamp Apples or Crabs, for Cyder or Verjuyce, or else grind Malt on the Quernes, pick Candle-rushes, or do some Husbandly office within doors till it be full eight a Clock: Then shall he take his Lanthorn and Candle, and go see his Cattle, and having cleansed the stall and planks, litter them down; look that they be safely tied, and then fodder, and give them meat for all night; then giving God thanks for benefits received that day, let him and the whole household go to their rest till the next morning.

Now it is to be intended, that there may be in the Household

hold more servants than one : and so you will demand of me what the rest of the servants shall be imployed in, before and after the time of plowing. To this I answer, that they may either go into the Barn and thrash, fill or empty the Malt fat, load or unload the Kilne, or any other good and necessary work that is about the yard ; and after they come from plowing, some may go into the Barn and thrash, some hedge, ditch, stop gaps in broken Fences, dig in the Orchard or Garden, or any other Out-work, which is needful to be done, and which about the Husbandman is never wanting, especially one must have a care every night to look to the mending or sharpening of the Plough-irons, and the repairing of the Plough and Plough-gears, if any be out of order ; for to defer them till the morrow, were the loss of a days work, and an ill point of Husbandry.

Now for the particular labours of Cattle, though it be already inclusively spoken of in that which is gone before, where I shew you how much a man may conveniently plough in a day with one Team or Draught of Cattle, yet for further satisfaction, you shall understand, that in your Cattle there are many things to be observed, as the kind, the number, and the Soil they labour in. For the kind, which are Oxen, Bulls, or Horses ; the best for the draught are Oxen, and the reason I have shewed in my former Works : The next are Horses, and the worst, Bul's, because they are most troublesome : the number fit for the Plough, is eight, six or four ; for the Cart, five or four ; and for the Waine, never under six, except in leading home of Harvest, where loading easily, four very good Oxen are sufficient ; for the Soil, if it be in the toughest and deepest earth, eight Beasts can do no more but fallow or break up Pease earth ; no, nor fewer stir, if the season grow hard and dry ; for sowing, Winter rigging and Seed furrow, six Beasts may dispatch that labour : if the Soil be mix'd and haffel, then six may fallow and sowe Pease, and four do every other ordure : but if it be light and easie Sand, then four is enough in every season. For the quantity of their work, an Oxe-plough may not do so much as a Horse-plough, because they are not so swift, nor may be driven out of their pace, be-

Particular Labours of Cattle.

ing more apt to surfeit than Horses be, so that for an Ox-plough to do an Acre, and an Horse-plow an Acre and a Rood, or an Acre and a half in good ground, is work fully sufficient.

C H A P. XXII.

The applying of Husbandry to the several Counties of this Kingdom, wherein is shewed the Office and Duty of the Carter or Plow-man.

IT is to be understood, that Husbandry doth vary according to the Nature and Climates of Countries : not one rule observed in all places, but according as the Earth, the Air, the much or little heat, moisture or cold doth increase or diminish, so must the skilful Husbandman alter his seasons, labours and instruments ; for in stiff Clays, as are all the fruitful Vales of this Kingdom (of which I have named most part in a Chapter before) as also *Huntington-shire*, *Bedford-shire*, *Cambridge-shire*, and many other of like nature ; all manner of arable work must be begun betimes in the year, and the Ploughs and Instruments must be of large size, and strong timber, and the labour great and painful : so also in mixt soils, that are good and fruitful, as *Northampton-shire*, *Hartford-shire*, most part of *Kent*, *Essex*, *Bark-shire*, and Counties of like nature ; all arable toils would begin at later seasons, and the Ploughs and Instruments would be of middle size, and indifferent timbers, and the labour somewhat less than the other ; but the light sandy grounds which have also a certain natural fruitfulness in them, as in *Norfolk*, *Suffolk*, most part of *Lincoln-shire*, *Hampshire*, *Surry*, and Counties of that nature, all arable toils would begin at the latest seasons, and the Ploughs and Instruments would be of the smallest and lightest size, and of the least timber, and the labour of all the other is easiest.

Lastly, for the barren unfruitful earth (of which only I have written in this (as in *Devonshire*, *Cornwal*, many parts of *Wales*, *Durbyshire*, *Lancashire*, *Cheshire*, *York-shire*, and many other like, or worse than they : the arable toils would have a fit season of the year, according to the temperateness of the year, which if it happen early, then you must begin your labours at later.

te: season, and for your Plough and Instruments, they must not keep any certain proportion, but be framed ever according to the ground, the stronger and stiffer ground having ever the strong and large Plough, with Instruments of like kind, and the lighter earth a Plow and Instruments of more easie substance: as for the labour, it must be such, and no other, than that which hath been already declared in this Book.

And hence it comes, that the office and duty of every skilful Plow-man, or Carter, is, first to look to the nature of the earth, next to the seasons of the year, then to the customs and fashions of the place wherein he liveth; which customs, although they be held as second natures amongst us, and that the best reasons of the best work-men commonly are, that thus I do, because thus they do; yet would I wish no man to bind himself more strictly to custom, than the discourse of reason shall be his warrant, and as I would not have him to prejudicate in his own opinion, so I would not have him too great a slave to other mens tradition, but standing upon the ground of reason, made good by experience, I would ever have him profit in his own judgment.

Now the further office and duty of the Husbandman, is, with The Carter's great care and diligence, to respect in what sort fashion to office. plough his ground: for although I have in the former Chapter shewed how he should lay his furrows, what depth he shall plow them, and how he shall be able to raise and gain the greatest store of mould; yet is there also another consideration to be had, no less profitable to the Husbandman than any of the former; and that is, how to lay your Land best for your own profit and ease, as also the ease of your Cattle which shall draw within your draught, as thus for instance: If your arable Land shall lie against the side of any steep hill (as for the most part all barren earths do) if then you shall plow such Land directly against the hill, beginning below, and so ascending streight upright, and so down again, and up again, this very labour and toying against the hill will breed such a bitter wearisomness to the cattle, and such a discouragement, that you shall not be able to compass one half part of your labour, besides the danger of over-heating and surfeiting of your beasts, whence will spring
many

many mortal diseases : Therefore when you shall plough any such ground, be sure to plough it side-ways over-thwart the hill, where your Beasts may tread on the level ground, and never directly up and down, so shall the Compost and Manure which you lay upon the ground not be so soon wash'd away from the upper-part of the ground, because the furrows not lying streight down in an even descent, but turned cross-ways upward against the hill, it must necessarily hold the Soil within it, and not let it wash away.

Of Cattle for draught.

Again, it is the office of every good Plow-man to know what Cattle are meetest for his draught, as whether Oxen or Horse, or both Oxen and Horse : wherein is to be understood, that although of all draughts whatsoever within this Kingdom, there is none so good to plough withal, both in respect of the strength, stability, indurance, and fitness for labour, as the Oxen are, in whom there is seldom or never any loss ; because whensoever his service faileth in the draught, his flesh will be of good price in the shambles; yet notwithstanding in this case a man must necessarily bind himself much to the custom of the Country, and fashion of his neighbours ; for if you shall live in a place where fuel is scarce and far to be fetch'd, as commonly it is in all barren Countries, which for the most part are stony Champains, or cold Mountains ; and your Neighbours, as well for the speed of their Journeys, as for length, keep Horse-draughts ; in this case also you must do the like, or else you shall want their company in your Journey, which is both discomfort and disprofit, if any mischance or casualty shall happen ; or being inforc'd to drive your Oxen as fast as they do their Horse, you shall not only over-heat, tire, bruise, and spoil them, but also make them utterly unfit either for feeding or labour ; and therefore if your Estate be mean, and that you have no more but what necessity requires, then you shall sort your Plow or Team according to the fashion of your Country, and the use of your neighbours : but if God have blest you with plenty, then it shall not be amiss for you to have ever an Oxe-draught or two to till your Land ; and a Horse-draught to do all your forraign abroad businesses : so shall your work at home ever go constantly forward, and your outward necessary Provisions be never wanting. Now for

for the mixture of Oxen and Horses together, it falleth out oftentimes that the Plow-man of force must be provided with Cattle of both kind, as if he happen to live in a rocky Country, where the steepness of the Hills, and narrowness of the ways, will neither suffer Cart, Wain, nor Tumbrel to pass; in this case you shall keep Oxen for the Plow to till the ground with, and Horses to carry pots and hooks: the first to carry forth your manure, and the other to bring home your Hay and Corn-harvest, your fuel and other provisions, which are needful for your family, as they do both in *Cornwal*, and other mountainous Countries, where Carts and Wains, and such like draught, have no possible passage.

Again, it is the office and duty of every good Plow-man to know his several labours, for every several month through the whole year, whereby no day nor hour may be mispent, but every time and season employed according as his nature requireth: as thus for example.

In the Month of *January*, the painful Plow-man, if he live in fertile and good Soyls, as among rich, simple Clays, he shall first plow up his Pease earth, because it must lie to take bait before it be sown; but if he live in fruitful, well mixt Soyls, then in this month he shall begin to fallow the field he will lay to rest the year following: but if he live upon hard barren earths (of which chiefly I write) then in this month he shall water his meadows & pasture grounds, and he shall drain and make dry his arable grounds, especially where he intends to sow Pease, Oats, or Barley the Seed-time following. Also he shall stub up all such rough grounds, as he intends to sow the year following. You shall measure and trim up your Garden moulds, and you shall comfort with manure, sand, or lime, or all three mixt together, the Roots of all barren Fruit-trees; and also cut down all such Timber, only there will be loss in the Bark, for the time is somewhat too early for it to rise. Lastly, you may transplant all manner of Fruit-trees, the weather being open, and the ground easie; you may rear Calves, remove Bees, and for your own health keep your body warm, let good diet and wholesome be your Physician, and rather with exercise than sauce encrease your appetite.

February.

In the month of *February*, either set or sowe all sorts of Beans, Pease, and other Pulse, and the stiffer your ground is, the sooner begin your work; prepare your Garden-mould, and make it easie and tender; prune and trim all sorts of Fruit-trees, from moss, cankers, and all superfluous branches; plash your hedges, and lay your quick-sets close and intire together; plant Roses, Gooseberries, and any fruit that grows upon little bushes; graft at the latter end of this month upon young and tender stocks, but by all means overlade not the stocks.

Lastly, for your health, take heed of cold, forbear meats that are slimy and phlegmatick, and if need require, either purge, bathe, or bleed, as Art shall direct you.

March.

In the month of *March*, make an end of sowing of all sorts of small Pulse, and begin to sowe Oats, Barley, and Rye, which is called *March-Rye*; graft all sorts of Fruit-trees, and with young Plants and Syens replenish your Nursery; cover the roots of all trees that are bared, and with fat earth lay them close and warm: if any Tree do grow barren, bore holes in the Root, and drive hard wedges or pins of Oak-wood therein, and that will bring fruitfulness; transplant all sorts of Summer-flowers, and give new comfort of manure and earth to all early Out-landish flowers, especially to the *Crown Imperial Tulips*, *Hyacinth*, and *Narcissus* of all shapes and colours; cut down under-wood for fuel and fencing, and look well to your Ewes, for then is the principal time of yeaning.

And lastly, bathe often, and bleed but upon extremity, purge not without good counsel, and let your diet be cool and temperate.

April.

In the month of *April*, finish up all your Barley-seed, and begin to sowe your Hemp and Flax: sowe your Garden-seeds, and plant all sorts of Herbs; finish grafting in the stock, but begin your principal inoculation, for then the Rind is most pliant and gentle; open your Hives, and give Bees free liberty, and leave to succour them with food, and let them labour for their living.

Now cut down all great Oak-timber, for now the bark will rise, and be in season for the Tanners; now scour your ditches, and gather such manure as you make in the streets and highways, into great heaps together; lay your meadows, sleight your corn-

corn-ground, gather away stones, repair your high-ways, Set Oziers and Willows, and cast up the banks and mines of all decayed fences.

Lastly, for your health, either purge, bathe, or bleed, as you shall have occasion, and use all wholesome recreation : for than moderate exercise in this month, there is no better Physick.

In the month of *May*, sow Barley upon all light sands and burning grounds, so likewise do your Hemp, or Flax, and also all sorts of tender garden seeds, as are Cucumbers, and Melons, and all kind of sweet smelling herbs and flowers ; Follow your stiff clays ; summer stir your mixt earth, and soyl all light and loose hot sands ; prepare all barren earth for Wheat and Rye, burn bait, stub Gorse or Furs, and root out Broom and Fern ; begin to fold your sheep, lead forth manure, and bring home fuell and fencing ; weed your winter corn, follow your common works, and put all sorts of grafs either in pasture or teather ; put your Mares to the Horse, let nothing be wanting to furnish the Dairy ; and now put off all your Winter fed Cattel, for now they are scarcest and dearest ; put young steers and dry kine now to feed at fresh grafs, and away with all pease-fed sheep ; for the sweetness of grafs mutton will pull down their prices.

Lastly, for your health, use drink that will cool and purge the blood, and all other such physical precepts, as true Art shall prescribe you : but beware of Mountebanks, and old wives tales, the latter hath no ground, and the other no truth, but apparent coufenage.

In the month of *June*, carry sand, marle, lime, and manure of what kind soever to your land ; bring home your coals and other necessary fuel fetch far off ; shear early fat sheep, sow all sorts of tender herbs, cut rank low meadows, make the first return of your fat cattel, gather early summer fruits, distill all sorts of plants and herbs whatsoever.

And lastly, for your health, use much exercise, thin dyet, and chaste thoughts.

In the month of *July*, apply your hay harvest ; for a day slackt is many pounds lost ; chiefly, when the weather is un-

stant, shear all manner of field-sheep, Summer-sheep rich stiff grounds, soyl all mixt earths, and latter soyl all loose hot sands. Let herbs you would preserve, now run to seed; cut off the stalks of out-landish-flowers, and cover the roots with new earth, so well mixt with manure as may be; sell all such Lambs as you steeled for the butcher, and still lead forth sand, mark, lime, and other manure; fence up your copses, graze your elder under-woods; and bring home all your field-timber.

And lastly, for your health, abstain from all physick, bleed not but upon violent occasion, and neither meddle with Wine, Women, nor no other wantonness.

August.

In the Month of *August*, apply your Corn Harvest; shear down your Wheat and Rye, mow your Barley and Oats; and make the second return of your fat sheep and cattle; gather all your Summer greater fruit, Plums, Apples, and Pears; in Summer make your sweet Perry, and Cyder; Set slips, and syens of all sorts of Gilly-flowers, and other flowers, and transplant them that were set the Spring before, and at the end of this month begin to winter-rig all fruitful soyls whatsoever, Geld your lambs, carry manure from your dove-coats, and put your swine to the early or first mast. And lastly, for your health, shun feasts and banquets. Let Physick alone, hate wine, and onely take delight in drinks that are cool and temperate.

September.

In the month of *September*, reap your pease, beans, and all other pulse, making a final end of your harvest; now bestow upon your wheat Land your principal manure, and now sow your Wheat and Rye, both in rich and in barren-climates; now put your swine to-mast, of all hands, gather your winter fruit, and make sale of your wooll, and other summer commodities; now put off those stocks of bees, you mean to sell, or take for your own use, close thatch and daub warm all the surviving hives, and look that no Drone, Mice, or other Vermin be in or about them; now thatch your stacks and reeks, thrash your seed Rye and Wheat, and make an end with your cart of all forraign journeys.

Lastly, for your health, in this month, use Physick, but moderately; forbear fruits that are too pleasant or rotten, and, as death, shun ryot and surfeit.

In

In the month of *October*, finish your wheat-seed, and scour *October.*
 ditches and ponds, plash and lay hedges and quickset, transplant,
 remove or Set all manner of fruit-trees, of what nature or quali-
 ty soever; make your Winter Cider and Perry, spare your private
 pastures; and eat up your corn-fields and Commons; and now
 make an end of winter ridging, draw furrows to drain, and keep
 dry your new sown corn; follow hard the making of your malt,
 rear all such calves as shall fall, and wean those teals from your
 draught mares, which the Spring before were foaled: now sell all
 such sheep as you will not winter, give over folding, and separate
 Lambs from the Ewes, which you purpose to keep for your own
 stock.

Lastly, for your health, refuse not any needfull Physick at the
 hands of the learned Physitian, use all moderate sports, for any
 thing now is good, which reviveth the spirits.

In the month of *November*, you may sow either Wheat or Rye *November.*
 in exceeding hot soyls, you may then remove all sorts of fruit-
 trees, and plant great trees either for shelter or shadow: now cut
 down all sorts of Timber, for plows, carts, axeltrees, naves, har-
 rows, and other husbandly offices; make now the last return of
 your grasse fed cattle, bring your swine from the mast, and feed
 them for slaughter, rear what calves soever fall, and break up all
 such Hemp and Flax, as you intend to spin in the winter sea-
 son.

Lastly, for your health, eat good wholesome and strong meats,
 very well spiced and dressed, free from rawness; drink sweet wines,
 and for digestion ever before cheese, prefer good and moderate
 exercise.

In the Month of *December*, put your sheep and swine to the *December.*
 pease Reeks, and fat them for the slaughter and market; now
 kill your small porks, and large bacons, lop hedges and trees,
 saw out your timber for building, and lay it to season; and if
 your land be exceeding stiff, and rise up in an extraordinary fur-
 row, then in this month begin to plow up that ground whereon
 you mean to sow clean beans only; now cover your dainty fruit
 trees over with canvase, and hide all your best flowers from frost
 and stormes, with rotten old horse-litter; now drain all your
 corn-fields, and as occasion shall serve, so water and keep moist

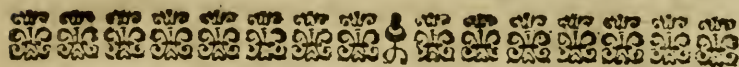
your meadows; now become the fowler, with Piece, Nets, and all manner of Engines, for in this month no fowl is out of season; now fish for the Carp, the Bream, Pike, Tench, Barbel, Peal and Salmon.

And lastly, for your health, eat meats that are hot and nourishing, drink good wine that is neat, sprightly and lusty, keep thy body well clad, and thy house warm, forsake whatsoever is flegmatick, and banish all care from thy heart, for nothing is more unwholesome then a troubled spirit.

Many other observations belong unto the office of our skilful Plow-man or Farmer; but since, they may be imagined too curious, too needles, or too tedious, I will stay my pen with these already rehearsed, and think to have written sufficiently, touching the application of grounds, and office of the Plow-man.

The End of Markham's Farewell to Husbandry.

The



The Table and general Contents of the whole Book.

CHAP. I.

THE Nature of Grounds in
general pag. 1
The knowledge of barren grounds.
p. 2.

CHAP. II.

The Ordering, Tilling, and Dres-
sing of all barren clayes, simple
or compound. p. 3.
The first enriching of barren
grounds. p. 3.
The manner of plowing. p. 4.
The hacking, sanding, and liming
of grounds p. 4. 5.
Additions, The use and profit of
lime. p. 5.
The manuring of grounds. p. 6.
The times for all labours. p. 6.
The second plowing. p. 7.
The second hacking. p. 7.
The first harrowing. p. 7.
Of sowing the seed. p. 8.
The second harrowing. ib.
Faults in the earth. ib.
The clotting of grounds. p. 9.
Another manner of clotting. p. 10.
Weeding. p. 11.
An objection and answer. p. 12.
The ordering of earths where sand
wanteth. ib.

Sowing of Salt. p. 13.
The excellency of salt. ib.
Of steeping seed in brine. p. 13.

CHAP. III.

Of the ordering, tilling, and dres-
sing of all rough barren clay,
simple or compound, being over-
run with Gorse, Broom, or, &c.
p. 14.
The destroying of weeds. p. 16.
Burning of Bait. ib.
The breaking of the burnt earth.
ibid.
The causes of unfruitfulness. 17.
An excellent manure. ib.
The plowing. ib.
Of divers manures. 18.
Of weeding. ib.
The time of Weeding. ib.
The gathering of stones. p. 9.

CHAP. IV.

Of the ordering, tilling, and dres-
sing of barren clayes, that are o-
ver-run with Whins. p. 20.
What whins are. ib.
Paring of grounds. p. 21.
Making of Baits. ib.
Breaking of Baits. p. 22.
Plowing. ib.
Har-

The Table.

Harrowing, weeding, & the pro- fits	p. 24	Of Manures.	p. 39.
CHAP. V.		Of harrowing, and other labours.	ib.
Of ordering, tilling, and dressing all barren clays which are o- ver-run with Ling and Heath.	p. 24.	Of weeding.	p. 40.
Destroying of Heath.	p. 25.	CHAP. IX.	
Another burning of bait.	p. 26.	The plowing, tilling, and ordering of sands, laden with moorish sinking grass.	p. 41.
Of weeding.	p. 27.	Grounds for fish-ponds.	p. 42.
CHAP. VI.		The draining of wet grounds.	p. 43.
Of the ordering, trimming; and dressing of all barren Sands, bearing nothing but mossie grass	p. 28.	The harrowing.	p. 44.
Of Plowing.	p. 30.	The weeding.	p. 45.
Of Marling.	p. 31.	Additions. CHAP. X.	
What Marl is.	ib.	A general way for the enriching of any arable grounds, either Clay or Sand, with less charge than formerly.	p. 45.
Additions.	ib.	Steeping of Seed-corn, or any Pulse	p. 46.
Of Chalk and the use.	p. 33.	Shavings of horn	ib.
The profit.	p. 35.	Hoofs of Cattel.	ib.
CHAP. VII.		Of Wood.	p. 47.
Of the plowing, tilling, and dress- ing of all barren Sands, that are over-run with Broken Fern, or Heath.	p. 35.	The enriching of ordinary Ma- nure.	ib.
Of sanding and liming.	p. 36.	Additions. CHAP. XI.	
Of plowing and sowing.	p. 37.	How to enrich for (cra) any barren rough woody ground, being new- ly stubbed up.	p. 48.
Labours after sowing.	ib.	Additions. CHAP. XII.	
Of weeding.	p. 38.	The manner of reducing, and bringing up to their first perfe- ction, all sorts of Grounds which have been over-flowed or spoyled by salt-water, or Sea- breach, either arable, or pa- sture, as also the enriching of bar-	ib.
CHAP. VIII.			
The plowing, tilling, and ordering of all barren Sands, laden with mitch, and wild Bryar.	p. 38.		
The destroying of mitch and bry- ar.	ib.		

The Table.

bettering of the same. p. 50.	Of Grasshoppers. ib.
Additions. CHAP. XIII.	Of Moles, and the cure p. 80.
Another way to enrich barren pasture, or meadow, without the help of water. p. 57.	Offences from the influence of Heaven. p. 81.
CHAP. XIV.	Of smuttiness or mildew, and the Cure. ib.
How to enrich or make the most barren soyl to bear excellent good pasture or meadow. p. 62.	Additions. ib.
Of watering grounds. p. 64.	Of Hail and the cure. ib.
The helps in watering. ib.	Of Lightning, Frosts, Mists, Fogs and blastings, and the cure 82, 83.
When and how to water. ib.	Corn reapt wet, and the cure. 83.
The best season for watering p. 65	Of washt corn. p. 83.
CHAP. XV.	To know washt corn. p. 84.
The enriching barren grounds, for Hemp or Flax. p. 66.	CHAP. XVIII.
Black clay for Hemp. p. 67.	How to keep all manner of Grain thrasht or unthrasht the longest time, and how to preserve it, &c. p. 86.
The making ill earth bear Hemp. p. 68.	Of Garners. p. 87.
The weeding. p. 69.	Of Hatches and their uses p. 88.
CHAP. XVI.	To preserve Wheat. p. 89.
The manner of stacking all kind of Grain with least loss, 70.	To preserve Rye. p. 93.
CHAP. XVII.	To preserve Beans. ib.
The diseases and imperfections which happen to all manner of Grain. p. 72.	To preserve Pease or Fetches. 95.
Crows, Pidgeons, or Birds, and the Cure. p. 73.	To preserve Lentils or Lupins. 98.
Additions. p. 74.	To preserve Oats. 100.
Of Pismires and Dorees, with the Cure. p. 75, 76.	To preserve Oat-meal. p. 99.
Of field Rats and Mice, and the Cure. p. 77.	To preserve any meal. p. 100.
Of worms and the cure. p. 78.	The preserving of all small seeds. p. 101.
Of Rye not to be wet. ib.	CHAP. XIX.
Of Snails p. 79.	How to keep Grain either for transportation, or, &c. p. 101.
	The use of Grain. p. 102.
	Of Pulse. ib.
	Of Rice and the use ib.
	Of

The Table.

Of Wheat, and the use.	p. 103.	CHAP. XXI.	
Of Oat-meal, and the use.	p. 104.	A general computation of men &	
Of Barley, and the use.	p. 105.	cattels labours, &c.	p. 122.
Of Buck, and the use.	ib.	Of Plowing, Sowing, and Mow-	
Of Pulse, and the use.	p. 106.	ing	ib.
Of French-beans.	ib.	Of Reaping and gathering Grain.	
Of the Kidney-bean.	ib.		p. 113.
Of common field beans.	ib.	Of Ditching, Hedging, Plashing	
Of Pease, and their use.	ib.		p. 114.
Several sorts of pease,	p. 107.	Of Delving and thrashing.	114.
To transport Grain.	ib.	The particular expences of a Day.	
Additions.	CHAP. XX.		ib.
The enriching of barren Grounds,		The particular labour of Cattel.	
and to make it fruitfull to bear			p. 117.
Hopps.	p. 109.	CHAP. XXII.	
Abating and encreasing of fer-		The applying of Husbandry to the	
tility.	ib.	several Countries.	p. 118.
Choice of grounds.	ib.	The Carters office.	p. 119.
Casting the hills.	p. 110.	Of Cattel for the Draught.	121.
Preparing the Allies, and Plan-		The several labours of the several	
ting the Hopps.	ib.	Months.	p. 121. to 126.

A D D I T I O N.

*An Excellent way to take Moles, and to preserve good
Ground from such Annoyance.*

Put Garlick, Onions, or Leeks, into the mouths of the holes,
and they will come out quickly, as amazed.

F I N I S.

